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## SAFE PRACTICES IN THE INDUSTRIAL USE OF CARBON TETRACHLORIDE

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Carbon tetrachloride, being the cheapest noninflammable solvent obtainable, has been in use in increasing amounts for over thirty years as a fire extinguisher, as a dry cleaning agent and for degreasing, fat extraction and similar purposes, as well as in medicine, more or less, as an anthelmintic and a cleansing agent in dermatology. From time to time reports have appeared in the literature on nonfatal and at times fatal poisonings from its careless use.<sup>1</sup> These reports and experimental work have indicated however that, if properly used in industry in closed processes, or with adequate exhaust ventilation in open processes, or in limited amounts in the open air, no harm will result.

The acute toxicity of its vapors is fairly well understood and Lehmann<sup>2</sup> gives 1,600 volumes of vapor per million volumes of air (parts per million) as safe for short exposures, although we feel that this is safe for only ten to thirty minutes. McCord,<sup>3</sup> on the basis of a comparatively brief exposure of rabbits, concludes that the safe limit for continuing exposures is somewhat below 500 parts per million; but, since Lehmann<sup>2</sup> has stated that rabbits are particularly susceptible to vapors of this type, because of a tendency to develop toxic pneumonia, this figure must be accepted as tentative. Davis,<sup>4</sup> as the result of a limited number of tests with human beings, concludes that more than 100 parts per million may be hazardous but that single exposures to small concentrations do not produce lasting injury. No other published work attempts definitely to fix a safe concentration for continuous exposure, and the reports quoted are not based on sufficient subjects or on long enough intervals to assure their adequacy, although they do indicate that low concentrations are reasonably safe.

The present work was undertaken in an effort to fill some of the gaps in previous work, to establish definitely safe concentrations for continuous exposure, to determine if possible what clinical signs might be taken

as evidence of early toxic action, and to determine to what concentrations workers are being exposed, correlating the concentrations with physical examinations when possible. Details of methods and results cannot be given in the space of the present paper but are all a matter of record elsewhere.<sup>5</sup>

### ANIMAL EXPERIMENT

A total of 333 animals was used, together with their offspring during the year of study, and included guinea-pigs, white rats and monkeys. About half of the pigs were fed 1.2 Gm. of calcium lactate a day in addition to their regular diet to determine protective action. Animals were exposed eight hours a day five days a week for ten and one-half months (225 exposures were made in all) to controlled, accurately measured concentrations of pure carbon tetrachloride vapors in concentrations of 25, 50, 100, 200 and 400 parts per million. It is of interest to know that the usual commercial grades are almost pure, containing only about 0.2 per cent of foreign matter, chiefly carbon disulfide, far too little to affect vapor toxicity. Studies of micro-pathologic changes of the liver, kidney, spleen, adrenal, heart, sciatic and optic nerve, and ocular muscle were made.

The guinea-pigs were quite susceptible to the vapors, many dying, in line with Lehmann's<sup>2</sup> statement as to the sensitivity of the very similar rabbits. No monkeys died, and only two rats, the latter after more than 100 exposures to 400 parts per million. No effect on alertness and general good health was seen. No abnormalities were found in blood counts, although active red cell destruction took place in the spleen. No effect on urine chemistry was seen, but many rats showed high icteric indexes, van den Bergh tests and low blood calciums, although these developed irregularly after definite liver changes were seen. Monkey blood chemistry was normal. The rats exposed to 50 parts per million grew more rapidly than did the controls, those exposed to 100 parts per million equaled the controls and those exposed to 200 and 400 parts per million grew a little slower. The rats exposed to 50 parts per million were 40 per cent more fertile than the controls, those exposed to 100 parts per million equaled the controls, and those exposed to 200 and 400 parts per million were less fertile. The addition of calcium to the diet of guinea-pigs increased resistance to the vapors but did not increase blood calcium.

Typical cirrhosis of the liver was produced in guinea-pigs that survived long enough to reach this stage as well as in rats, but no monkey was sufficiently injured. A surprisingly great degree of regeneration in both liver and kidney originally damaged by exposure took

Read before the Section on Preventive and Industrial Medicine and Public Health at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 13, 1936.

1. Smyth, H. F.: Carbon Tetrachloride in Industry, *Indust. Med.* 4: 12-15 (Jan.) 1935.

2. Lehmann, K. B., in Kobert: *Kompandium der praktischen Toxikologie zum Gebrauche für Aertze, Studierende und Medizinalbeamte*, ed. 5, Stuttgart, 1912.

3. McCord, C. P.: Carbon Tetrachloride, *Indust. Med.* 1: 151-157 (Dec.) 1932.

4. Davis, P. A.: Carbon Tetrachloride as an Industrial Hazard, *J. A. M. A.* 103: 962-965 (Sept. 29) 1934.

5. Smyth, H. F.; Smyth, H. F., Jr., and Carpenter, C. P.: The Chronic Toxicity of Carbon Tetrachloride, *J. Indust. Hyg. & Toxicol.* 18: 277 (May) 1936.

place while exposures continued, and within four to eight weeks after exposures were stopped almost all animals had normal livers save for contracted bands of connective tissue, and kidneys also appeared normal. After this rest period the tissues of even monkeys exposed to 225 days at 200 parts per million (the highest concentration monkeys received) were com-

TABLE 1.—Summary of Carbon Tetrachloride Vapor Concentrations Found in Industry

Description of Process	Number Tested	Average P.p.M. During Cycle			Peak P.p.M. in Any Half Minute
		Maxi- mum	Median	Mini- mum	
Dry cleaning					
Closed machine; clothes nearly odorless when handled.....	9	71	29	10	1,250
Open machine in ventilated booth; small window for manipulation	4	234	72	49	1,020
Open machine in ventilated booth; open end, man works in booth	12	230	52	18	1,510
Other uses of carbon tetrachloride					
General room air distant from source of vapor.....	6	54	29	0	1,230
Closed process; usually no odor of solvent .....	3	84	62	59	800
Solvent must evaporate to fulfill its purpose; ventilated.....	9	119	62	11	494
Vapors vent to room, as in filling cans and drums.....	23	650	70	14	2,050
Cleaning tanks, filters, and centrifuges .....	8	620	251	72	7,860

pletely normal on microscopic examination. Definite adrenal damage was seen in guinea-pigs but not in rats or monkeys. Acting on the suggestion of MacNider's<sup>6</sup> paper on the increased resistance of liver cells regenerated after injury produced by uranium, a few comparisons were made of the resistance to toxic effect from short anesthetizing exposures (thirty minutes to 20,000 parts per million = 2 per cent) after rats had been allowed to recover for from one to two months following six

As a result of these experiments, on the assumption that, of the animals used, monkeys resemble human beings most closely and rats next most closely, it is believed that 100 parts per million is a safe concentration for continuous exposure to carbon tetrachloride vapors. It is believed that exposures of small omnivorous animals to vapors eight hours a day from early adolescence to decline of fertility, as was done here, is equivalent to many years of exposure of adult human beings in toxic action, owing to physiologic action during tissue growth. Pups of rats exposed to 50 parts per million were exposed from birth and were no more affected than were their parents, nor were any pups more affected than were their parents.

VAPOR CONCENTRATIONS FOUND IN INDUSTRY

For measurement of concentrations of carbon tetrachloride vapor in establishments manufacturing the solvent and using it, a 50 cm. portable Zeiss interference refractometer (or interferometer) was used. Samples of air were taken from a point near the worker's nose at intervals of from ten seconds to five minutes, spaced to give a reliable average of working conditions and to catch any peaks of concentration created by the job. Tests were made throughout the five plants manufacturing the solvent in this country, in the plants of twenty-three dry cleaning establishments using five different makes of machine, and in eight plants repacking the solvent or using it in chemical processes. The dry cleaning establishments visited were all well cared for installations, so they actually represented the best conditions rather than the average conditions of the industry. A total of 2,000 measurements was made, the results being summarized in table 1. Because of condensation of data, the table does not give the true average exposure of the workmen during their eight hour day, giving only the average for the process. When the usual time a man works at a given job is considered, only two of the plants visited provided jobs in which average concentrations were above 100 parts per million, which the animal work indicated to be a safe concentration. It is our experience that

TABLE 2.—Abnormal Changes in Physical Examination of Workmen

	Men Exam-ined	No Abnor-mality	One Abnor-mality	Two Abnor-malities	Three Abnor-malities	Visual Field	Lym-pho-cytes	Mono-cytes	Icteric Index	Blood Calcium	Van den Bergh	Urine Nitro-gen	Urine Sulfate	Urine Bili-rubin
Limit adopted for normal range....	..	..	..	..	..	-30°	6,000	600, 10%	9	7.0	0.2	35.0	2.25	0
Exposure averaging above 100 p.p.m. (maximum 117 p.p.m.).....	8	4	4	0	0	2	0	0	0	1	0	1	0	0
Exposure averaging below 100 p.p.m. (5 to 90 p.p.m.).....	78	38	23	9	3	7	3	10	18	12	5	0	0	0
Exposure not measured but known not to be extreme.....	10	5	2	3	0	1	0	1	3	2	1	0	0	0
Totals.....	96	47	34	12	3	10	3	11	21	15	6	1	0	0

months or more of exposure to low concentrations. Definite marked injury was produced in the livers and kidneys of previously unexposed rats but only slight injury or no injury at all in these organs of animals previously exposed to concentrations of from 50 to 400 parts per million. As far as one can argue from this limited experiment, involving only thirteen rats, it seems that recovery from previous exposure endows the animals with more than normal resistance to injury from carbon tetrachloride.

high concentrations of this and other volatile materials in work places are usually due to overlooked leaks or to ignorance of the need of care rather than to inherent properties of the solvents.

PHYSICAL EXAMINATIONS

Physical examinations were made of ninety-six workers exposed to carbon tetrachloride vapors at their jobs; in most cases determinations were made at the particular point of work of these men. It is significant of the care being taken in the industry today that the highest average daily exposures found were 117 and 111 parts per million. The only peak concentrations

6. MacNider, W. deB.: The Resistance of Fixed Tissue Cells to the Toxic Action of Certain Chemical Substances, Science 81: 601-605 (June 21) 1935.

found to exceed 1,000 parts per million in places where men who were examined worked were 1,680 and 1,252 parts per million, but several men worked with air helmets in which peaks were over 1,000 parts per million. These peaks invariably lasted only one-half minute or thereabouts.

Wirtschafter<sup>7</sup> reported concentric restriction of visual fields as probably being significant of carbon tetrachloride injury. We fully realize that a number of factors make our measurements of visual fields uncertain, because of the conditions of work necessary in factories and because of the use of a portable perimeter only. The measurements therefore must be regarded as approximate and subject to correction if repeated in an ophthalmologist's office. Dr. Burton Chance, Philadelphia ophthalmologist, aided in interpreting the fields obtained. These were considered definitely restricted and possibly significant of carbon tetrachloride injury in the present study when the restriction toward the bottom and outer edge was 30 degrees or more.

Although it is realized that continuing toxic exposure may produce anemia, and examination of animal spleens indicated active red blood cell destruction, no worker was found with this condition. Following Boerner,<sup>8</sup> 6,000 lymphocytes per cubic millimeter and 600 monocytes were considered normal maximums. Minot and Smith's<sup>9</sup> studies with perchlorethane governed the addition of 10 per cent monocytes as a maximum, so that if either the percentage or the absolute number exceeded one of these figures it was considered abnormal. Icteric indexes of 8, and indirect van den Bergh reactions of 0.2 per hundred cubic centimeters are considered normal maximums, and blood calcium of 7 mg. per hundred cubic centimeters is considered a normal minimum. Blood sugar was not determined in order to avoid making too great a demand on the workers. A total of 35 Gm. of nitrogen in a twenty-four hour specimen of urine and 2.25 Gm. of total sulfate were taken as normal maximums. Takahashi<sup>10</sup> reported both values raised in injury caused by carbon tetrachloride. Bilirubin or albumin was not found in any urines.

For susceptible workers, length of exposure may be important, but nineteen workers were examined each of whom had worked at least ten years with carbon tetrachloride and one of them twenty-five years, none with any evidence of severe injury. Eleven of the nineteen showed no departures from normal at all, five showed only one minor departure each among the eight tests already mentioned, and three showed two minor departures each.

While one might usually anticipate rather definite correlation between degree or duration of exposure and evidence of injury, personal susceptibility not infrequently varies greatly, as do contributing factors such as habits, diet and the use of stimulants, so that correlations may not be found. Low calcium and low carbohydrate diets, especially, increase toxic action of carbon tetrachloride, as does the excessive use of alcohol.

Table 2 summarizes the physical examinations, giving the number of times one of the eight selected clinical studies fell outside the normal range. No worker was found to be seriously affected by the exposure to vapor. Among eight men working in concentrations averaging more than 100 parts per million, four showed no abnormal changes, two had restricted visual fields, and one had low calcium and one high urinary nitrogen. Among seventy-three working in concentrations averaging under 100 parts per million, thirty-eight gave no deviations from normal, eighteen high icteric indexes, twelve low blood calciums, five high van den Bergh reactions, seven restricted visual fields, and thirteen high lymphocytes or monocytes. A similar distribution was found among ten men working in unmeasured concentrations. None of the deviations from normal were marked. No man departed from normal in more than three out of the eight tests studied. Limitation of space prevents a more detailed presentation here.

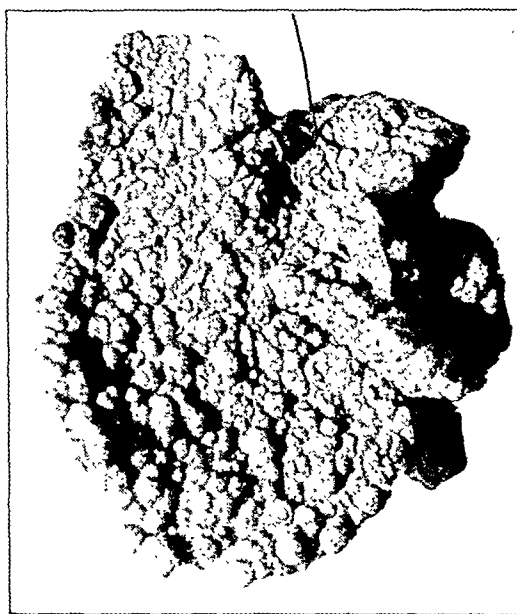


Fig. 1.—Liver of rat 377, showing advanced cirrhosis, color yellow; 119 exposures to 400 parts per million.

Men with histories of long exposure to carbon tetrachloride undoubtedly had developed resistance just as did experimental animals and actually showed fewer abnormalities than did men just starting work. No man considered materially or appreciably weakened by exposure was found, no pallor or jaundice, and only one large liver, in a man admitting that he was chronically addicted to alcohol. He has now been given another job in which there is no carbon tetrachloride exposure. The men uniformly reported that subjective symptoms (headache, nausea, dizziness, undue fatigue and the like) suggestive of toxic action were present only during brief periods of bad ventilation, machine cleaning, spills, or other intermittent high exposures.

Since it is impossible to state that any of the abnormalities are actually due to carbon tetrachloride, and since it is certain that past exposures of most of the men exceeded the measured present exposure, the data can give evidence only of the fact that none of the men were markedly affected by exposure. The data therefore cannot be used alone in fixing on a safe concentration, but, considered together with the animal results, it is believed that a valid answer is possible.

7. Wirtschafter, Z. T.: Toxic Amblyopia and Accompanying Physiological Disturbances in Carbon Tetrachloride Intoxication, *Am. J. Pub. Health* 23: 1035-1038 (Oct.) 1933.

8. Boerner, F.: Standard Normals and Normal Ranges in Hematology, *Am. J. Clin. Path.* 1: 391-398 (Sept.) 1931.

9. Minot, G. R., and Smith, L. W.: The Blood in Tetrachloroethane Poisoning, *Arch. Int. Med.* 28: 687 (Dec.) 1921.

10. Takahashi, M.: Ueber das Stoffwechselverhältnis bei der Kohlenstofftetrachlorid-Vergiftung, *Jap. J. Exper. Med.* 7: 417-447 (Aug. 10) 1929.

However, the table does give information as to the abnormal clinical data to be expected from men continuously exposed to low concentrations of carbon tetrachloride without being markedly affected. From this standpoint the four tests that would apparently give the most information about the condition of exposed workmen and would presumably detect injury at the earliest possible date by an increase between successive examinations would be the icteric index, blood calcium, van den Bergh reaction and visual field. Any progressive change in the values for these tests among men regularly examined should be regarded with suspicion.

#### CARE OF EXPOSED WORKMEN

The suggestions given by Davis<sup>4</sup> for selection of workers for carbon tetrachloride exposure are considered excellent. Animal work indicates that the addition of available calcium to the diet is of value in prophylaxis, and probably also in treatment.

It is desirable that physical examinations of exposed workers be carried out at least twice a year. These should include determination of the icteric index, blood calcium, van den Bergh reaction and visual field mapping, as well as an examination of the general health. Preferably they should include also white cell and differential counts.

The development of an abnormal value in one of the single tests mentioned should call for watchfulness and an early reexamination, preferably one month after the first. If two abnormal values should develop, the exposure should be lessened and the man should be examined again in a month. If three are found, the

ance, the free period having sufficed for the development of regenerated, more resistant, parenchymatous cells.

#### COMMENT AND CONCLUSIONS

On the basis of animal experiments and on the assumption that monkeys resemble human beings most closely of the animals used and rats next most closely, it is concluded that 100 parts per million of carbon tetrachloride is a safe working concentration for con-



Fig. 3.—Liver of rat 393, showing regeneration from cirrhosis, with contracted septums; magnification 250. Seventy-six exposures to 400 parts per million. Sixty-three days without exposure.

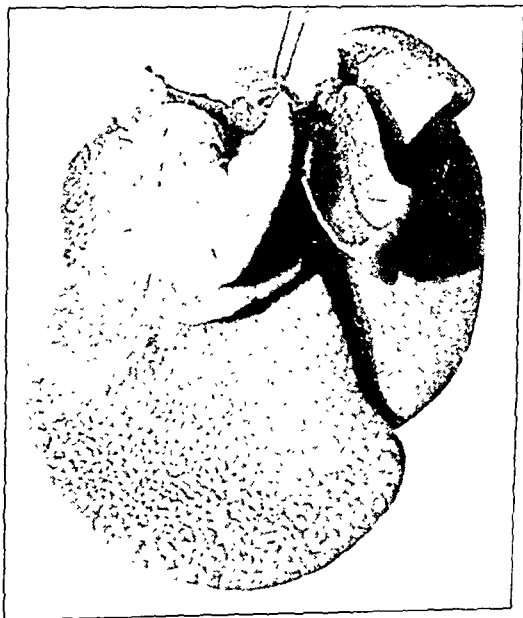


Fig. 2.—Liver of rat 395, showing regenerated cirrhosis, color normal; sixty-eight exposures to 400 parts per million, and 156 days without exposure; section resembles figure 3.

man should be moved to a department without carbon tetrachloride vapors. If at the end of a month in the new job his condition has returned to normal, his exposure may be resumed under a watchful eye. He may be found to be especially susceptible, in which case he should be given a permanent job without exposure to carbon tetrachloride. On the other hand, it is more likely that he will have developed an increased toler-

tinuous exposure of workmen during the working day. Intermittent exposures averaging 100 parts per million when the duration of exposure is taken into account also are safe, and concentrations considerably higher than 100 parts per million are safe for short periods. It is believed that 1,000 parts per million is a safe peak concentration for half an hour a day, with an average of 100 parts per million during the rest of the day. These limits refer to day after day exposure in industry.

One hundred parts per million of carbon tetrachloride is noticed by most people coming into the atmosphere from one free from carbon tetrachloride as a barely perceptible characteristic odor, and particularly sensitive noses will detect 50 parts per million. If the average nose recognizes more than a faint odor on entering the workroom, an increase in ventilation is called for.

This concentration of 100 parts per million agrees with the conclusions of Davis<sup>4</sup> and is in general agreement with McCord,<sup>5</sup> who considered on the basis of short exposures that the safe concentration lay below 500 parts per million.

An animal continuously exposed to small amounts of carbon tetrachloride soon regenerates originally damaged liver cells and somewhat later regenerates damaged kidney cells, the regenerated or entirely new cells being more resistant to the vapors than were the original cells. It is concluded from this that in most cases men continuously exposed to small concentrations of carbon tetrachloride increase their resistance rather than increasing their susceptibility. This contrasts strongly with the action of benzene, the safe con-

centration of which is also set at 100 parts per million, since with that solvent injury may be progressive even after exposure is stopped.

It is entirely possible and practical to use carbon tetrachloride for almost any purpose without exceeding a concentration of 100 parts per million. Standard dry cleaning machinery already on the market will keep the concentration much below this figure and can be maintained in condition without anything more than ordinary care. Other processes using carbon tetrachloride can be operated in a similarly safe manner if plant managers realize that it is necessary, without unduly increasing expense and in some cases with a saving of solvent.

Of the total of ninety-six men exposed to carbon tetrachloride in industry, tests showed no one who could be considered seriously or even unmistakably injured by the solvent vapors. Nineteen of these men had worked more than ten years with the solvent, one of them twenty-five years. Although no unmistakable clinical test has been found to determine whether or not a given worker is being injured by carbon tetrachloride before the injury has progressed, it is believed that the series of tests which are suggested will establish strong probabilities, and for this reason a program of physical examinations of exposed workmen is suggested. The following of this program would protect men from more than the first stages of carbon tetrachloride injury, and men detected in these first stages do not have a progressive condition and hence will return completely to normal when their exposure is stopped. In most cases such men will attain added resistance by regeneration of injured cells during a short rest from exposure, although occasional men probably will be found who cannot work with carbon tetrachloride at all.

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#### ABSTRACT OF DISCUSSION

DR. PAUL A. DAVIS, Akron, Ohio: The authors have concurred with my experience that 100 parts per million and less is a safe concentration to maintain when the worker spends from eight to ten hours daily in its presence and that carbon tetrachloride can be used safely in industry if proper ventilation is maintained to keep the concentration low. I have seen several cases in which the liver has been involved to such an extent that several months elapsed before the jaundice had disappeared. Cameron and Karunaratne in the *Journal of Pathology and Bacteriology* of Edinburgh have described carbon tetrachloride cirrhosis. The rubber industry in 1916, 1917 and 1918, during the war period when production was at a premium, used carbon tetrachloride indiscriminately in many kinds of mixtures, because it was cheap and an excellent solvent. Ventilation at that time was neglected and there was much sickness. Since that time ventilation has been improved, supervisors have been educated and a lot has been learned about the toxic properties of carbon tetrachloride and how to handle it. Carbon tetrachloride has been guilty in the past of causing considerable temporary disability, for even in nontoxic concentrations it will cause nausea and vomiting in many workers, which means a loss of time from work. Even though the concentration may be only 100 parts per million it nauseates some workers and they must be relieved from work. I have examined hundreds of these individuals without finding any clinical evidence of poisoning so far as laboratory tests are concerned, but nausea and vomiting are still present and I am inclined to believe that the peculiar odor of carbon tetrachloride is a hyperosmic stimulant. Negative laboratory tests for toxicity do not always insure a cure of the conditions complained of. The authors have mentioned a high calcium diet, which is a good suggestion. The industry with which I am associated has furnished milk for these workers and advised them to eat freely of vegetables at home. Female

workers are more sensitive to the vapors and odors of carbon tetrachloride than the male. With the modern methods of ventilation, it is not at all difficult to keep these vapors and odors at a minimum, but carbon tetrachloride, being a non-inflammable solvent, is used more freely and carelessly than other more dangerous solvents.

DR. W. F. VON OETTINGEN, Wilmington, Del.: I should like to ask the authors how many animals they used for each concentration and whether they have any explanation for the stimulating effect of 40 per cent concentrations on the growth. I wonder whether they have found any difference of higher concentrations on the reproduction of male and female animals, and whether younger animals are more or less susceptible than mature animals. I should like to ask them whether, in those slides which were taken from organs during the process of regeneration, they have seen differences in the shape of the regenerated cells that might parallel the reports by MacNider, who correlates these changes with the increased resistance of those animals to chloroform vapors.

DR. W. J. McCONNELL, New York: I should like to ask Dr. Davis what his experience has been in the treatment of men acutely overcome with carbon tetrachloride. I have had reported recently three instances in one organization in which the intern who called for these patients administered epinephrine and all three immediately died. It appears as though the epinephrine is a sufficient stimulant or added stimulant to throw the heart into ventricular fibrillation. There is some evidence that when the heart is already in that condition the epinephrine has been found effective, but apparently in individuals in whom the heart is weak and the pulse irregular it is rather a hazardous type of treatment. I have recommended merely the inhalation of oxygen in those cases. I wonder whether he has had any experience in the treatment of those more acute cases.

DR. HENRY FIELD SMYTH, Philadelphia: I can answer some of Dr. von Oettingen's questions. We set out with the idea of taking twenty-four small animals in each group. Of course, some of these died from infections, but in every group we carried through the experiment in fifteen or sixteen animals. There were four monkeys in each group. As to the explanation of the fertility, and as to whether the effect on fertility involved males more than females, I do not know. Frankly, that was only incidental in the experiment. We kept a large control colony from the same group of rats, and that was our norm. They were fed the same as the other animals and were kept under the same conditions except that they were not put in exposure chambers. I realize that our observations are incomplete. An attempt was made to get all the animals of about the same age, the early adult rat, but pups were born during the experiment and they were somewhat more resistant; whether that was due to the fact that they were pups or to the fact that they had been born of parents under exposure, I am not prepared to say. As to regeneration cells, they were larger than the normal liver cells, with large spherical nuclei, uniformly granular, and in animals submitted to concentrations of 200 parts per million, in many acini these larger cells were recognized as regenerative, because one often sees pretty mitotic figures in them. When the organism was completely regenerated, after being exposed for several months, they practically came back to the normal, but the acini are smaller, with more connective tissue bands. We made recommendations following Dr. Davis's suggestions as to the selection of workers. We did not go any further because we thought his selections were excellent and were based on experience in industry.

DR. PAUL A. DAVIS, Akron, Ohio: The doctor asked a question of me concerning the use of epinephrine in carbon tetrachloride cases. If the case is acute and the patient unconscious, my treatment is to give intravenous calcium glutinate at once and then get a heart reading if possible. If the patient has a myocarditis, epinephrine should not be given. As to the definite procedure, one ought to know the heart condition before ever doing anything about it, and I think that if a man has reached the stage of narcosis from carbon tetrachloride, has an acute acidosis, and his heart muscles are in such a bad condition, one should not push them up by giving epinephrine. If he is not unconscious, plenty of fresh air should be given. Inhalations of oxygen with 2 per cent carbon dioxide after that is simply an after-treatment.

## SECONDARY RESECTIONS IN RECURRING CARCINOMA OF THE COLON

J. W. THOMPSON, M.D.  
ST. LOUIS

Carcinoma of the colon is a very common lesion, which occurs at all ages. In approximately 50 per cent of all cases encountered the disease has advanced beyond hope of surgical relief. There is an operative mortality varying from 5 to 35 per cent. Frequently the recovery of the patient is stormy, and in lesions of the rectum and lower part of the colon there is all too often the mutilation and social isolation associated with permanent colostomy. In growths more proximally situated, the problem of colostomy is avoided but the frequency of recurrence is greater. Metastasis to the liver and to regional lymphatic channels is always a specter which haunts the lives of those individuals fortunate enough to survive operation. The outlook for a patient proved to have even an operable carcinoma of the colon is, to say the most, not greatly encouraging.

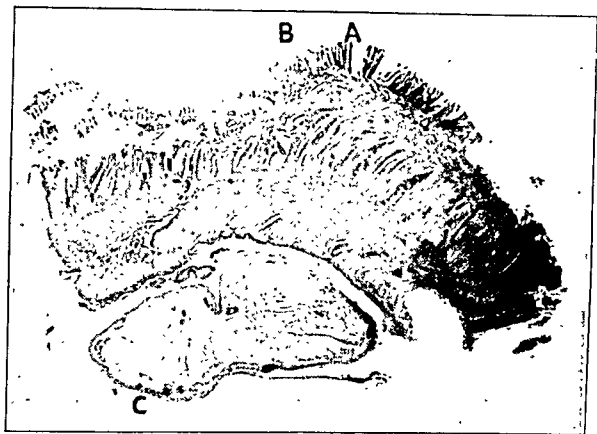


Fig. 1 (case 1).—Microscopic section of first tumor. Edge of primary circumscribed ulcerating carcinoma arising in the mucosa of the pelvic colon with early extension of malignant glands into the submucosa and partly through the muscle coats. The mucosa shows a sudden change (A) from hypertrophic colon mucosa (B) to well differentiated carcinoma. There are a very few malignant glands beneath the peritoneum of the mass of fat tissue under the serosa (C). This tumor was excised wide of the section shown.

This statement is true despite the tremendous amount of propaganda put forth in an attempt to get earlier diagnoses of abdominal or other malignant conditions.

The surgeon who frequently operates for cancer of the colon is always hopeful that his ministrations have been successful, but in many instances recurrence takes place so soon after operation that the difficulty of complete removal of the primary growth is a distinct challenge to the advisability of any attempt to eradicate the disease. The attitude of mind of many practitioners when confronted with a patient in whom a definite diagnosis of a gastro-intestinal malignant growth is made is frequently one of complete hopelessness. Because of this attitude it is difficult to persuade patients to be operated on. The problem is even more difficult when one is faced with the frank presence of recurrence. It

is my opinion that in lesions of the colon in which there is not definite evidence of metastasis in the liver, recurrence in or about the site of previous operative intervention should not deter one from reexploration with a second attempt at removal of the neoplasm. Such cases are admittedly few and are so rare that, when encountered, they should be reported in order to combat the tendency to futile surrender when faced with the possibility of a recurrent carcinoma in a patient otherwise in good or fair general physical state. It is my purpose in this paper to present a small series of such cases in which a second resection of the large bowel has been successfully performed for recurrence of malignant lesions.

Subsequent to apparently complete removal of a colonic lesion the growth may recur at the line of anastomosis, in the operative incision or in the regional lymph nodes, or it may appear in distant organs as the result of metastatic emboli. Recurrence by implantation from abdominal tumors, especially in the exteriorization type of procedure, is a well recognized hazard. The return of many malignant tumors usually is prompt and local, but many years may elapse between the primary removal and the appearance of a recurrence. This phenomenon is more striking in other organs than the gastro-intestinal tract. Thus Ewing<sup>1</sup> records cases wherein thirty years elapsed between primary operation and recurrence in breast cancer, twenty-one years in rectal cancer, and fifteen years in uterine cancer. He quotes Gross as having performed twenty-two operations in fifty-four recurrent tumors in a case of sarcoma of the breast during four years, the patient finally recovering. Thus ample precedent has been established in suggesting that renewed attempts be made completely to extirpate growths which have a tendency to return in a localized area of the large bowel.

Recurrent tumors in the great majority of cases arise from cells or portions of the tumor that have escaped removal. Microscopic section of specimens removed at operation reveal that the knife has passed through strands of tumor tissue or vessels containing tumor cells. For this reason it has always been the practice of abdominal surgeons in performing resections of the intestinal tract to remove a wide portion of normal appearing bowel above and below the primary growth. Serial sections of the normal appearing bowel wall will frequently show that there are strands of cells left behind, and with the abdomen sewed up and the patient returned to the room there is little to do except wait for the possibility and almost certainty of recurrence. Arising from remnants of the original growth recurrence is usually prompt, multiple, in the line of incision or nearby, and of the same type as the original growth, or more malignant. Yet there are many cases which remain dormant for years, and there is always the possibility that the defensive forces of the body will isolate and destroy the few remaining cells by enveloping them in a wall of fibrous tissue proliferation. According to Ewing:

The many instances in which partial removal of malignant tumors has been followed by regression of the remnant, as in ovarian carcinoma and in chorioma, indicate that the mechanical disturbance of nutrition, or removal of local sources of growth stimulus, or the general relief of the organism from toxic products, turn the balance in favor of the patient, and lead to absorption of the tumor cells. Thus tumors in rats sometimes regress after hemorrhagic infiltration following

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The author is indebted to Dr. H. W. Soper for access to his case records, to Dr. E. V. M. Mastin for his permission to include case 3 in the series herein reported, and to Dr. Walter J. Siebert, pathologist of DePaul Hospital, for his careful study of the tissues microscopically and for helpful suggestions.

1. Ewing, James: *Neoplastic Diseases*, ed. 3, Philadelphia, W. B. Saunders Company, 1927, chapter 4.

crushing trauma. The same factors may be assumed to retard the growth in more malignant tumors which spring up at varying periods after incomplete removal.

In one of the cases presented in this series the original removal of the primary growth seemed quite adequate, and after reoperation for recurrence, had the abdomen not borne the scars of previous operations, the growth present at the secondary session could easily have been deemed the primary one. There was no evidence of metastasis to the regional lymph nodes, the adjacent peritoneal surfaces or the distant viscera, particularly the liver. This unusual finding prompted a review of the literature on recurrence of colonic malignant growths and led to the question as to whether or not the second growth might not be an entirely new and independent one. Could it have been that there was in this patient's organism some stimulus which provoked the development of the second growth in the same manner and in the same site in which the first tumor developed? The specimen removed at the first operation was sectioned serially above and below the growth and no microscopic evidence of incomplete removal was seen. The layers of the intestinal wall appeared to be entirely normal. There was at one place an extension of the growth through the intestinal wall to the peritoneal covering immediately below the growth, but this had been removed in toto with the growth and a wide wedge-shaped piece of the mesentery. Consequently one was impressed with the appearance of the second growth, which was freely movable, entirely without attachment to the adjacent peritoneum or evidence in the gross lymph nodular involvement. It appeared to be a "brand new tumor." The remainder of the abdominal viscera and lymphatics appeared to be free from involvement.

Ewing,<sup>1</sup> in discussing the problem of recurrence, states the possibility of a tumor exerting a pervasive formative influence, leaving the surrounding tissues in a state of excitation with a momentum toward neoplastic growth, so that after removal of a tumor the adjacent tissues give origin to a new tumor. This somewhat vague conception is vigorously opposed by other authorities and cannot be reconciled with the theory of the origin of carcinoma from isolated cell groups. Yet there are considerations that render it inadvisable to discard such a theory of recurrences. This question is closely related to that of the influence of tumor growth on surrounding tissues and to that of the multiple origin of tumors of the same organ. Attention has been called to the fact that some tumors advance by gradual lateral extension over previously normal cells, so that removal at one stage of this extension may leave cells which later reveal their momentum toward tumor growth. The local predisposition to tumor growth may extend over a considerable area, in all of which a neoplasm does not reveal itself at once but develops in several stages or foci. Such conditions are clearly revealed in neurofibromas, and, according to Hauser,<sup>2</sup> with various carcinomas, especially those of the gastro-intestinal tract.

It is well known that tumors of various organs, including the colon, may be multiple. Combinations of multiplicity in the different systems as well as in individual organs or viscera are likewise noted. Warren and Gates,<sup>3</sup> in an exhaustive review of the literature

of multiple primary malignant lesions in the year 1932, collected from the literature 1,259 cases which were identified with accuracy. They conclude that the frequency of multiple malignancy is 1.84 per cent of cancer cases. Multiple cancers occur at approximately the same age as single cancers. Multiple malignant tumors occur more frequently than can be explained on the basis of chance. This may be explained by a predisposition or susceptibility to cancer in certain persons, or the action of some factor or stimulus favoring the development of a malignant growth. The nature of this predisposition is as yet unknown and in the limited space available for this presentation cannot be adequately discussed. Those interested in pursuing the subject further are referred to the excellent article by the aforementioned authors.

The question of whether or not the lesions are true recurrences or new primary growths need not overshadow the practical importance in the clinical field of judicious attempts to relieve the patient of his disease. The general attitude of hopelessness expressed by many practitioners when confronted with patients who have manifestations of recurrence should be combated. There is nothing to be gained by telling the patient that,

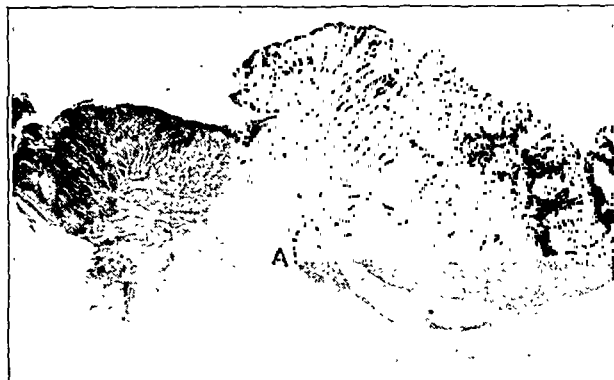


Fig. 2 (case 1).—Microscopic section of second cancer. "Recurrence" at the site of the anastomosis following the wide resection of the cancer. A shows a small mass of cancer cells in the serosa, which may be a possible source of the recurrent tumor. This tumor, however, shows many characteristics of a primary carcinoma. It appears to commence in the mucosa and to extend through the submucosa into the muscularis. There was no evidence of lymph node involvement in the widely excised tissue. The involvement of the serosa is limited strictly to the area shown here.

because the lesion has apparently returned, his cause is lost and he must immediately prepare for the inevitable. Provided there is no definite evidence of hopeless metastasis in the lungs or in the liver, recurring symptoms of obstruction or of blood in the stools, either in gross amounts or determinable by the guaiac test, should suggest reexploration of the patient's abdomen and examination for the possibility of further resection or palliation rather than immediate and definite condemnation to a certain slow and extremely obnoxious manner of death. It is with the hope of encouraging others to adopt a positive instead of a negative attitude toward such cases that this paper is presented.

In spite of the fact that the literature on multiple malignant lesions is rather extensive, as a perusal of the review by Warren and Gates will reveal, there is little or no mention of the surgical removal of recurrent lesions, although multiple lesions of the bowel have been noted and frequently removed. Barga and Rankin<sup>4</sup> in 1930 reported a series of sixteen cases of multiple carcinomas of the large intestine, but in none of these

2. Hauser, V. A.: *Das Cylinderepithel des Magens und des Darms*, Jena, 1890.

3. Warren, Shields, and Gates, Olive: Multiple Primary Malignant Tumors, *Am. J. Cancer* 16: 1358-1409 (Nov.) 1932.

4. Barga, J. A. and Rankin, F. W.: Multiple Carcinomata of the Large Intestine, *Ann. Surg.* 91: 583-593 (April) 1930.

was there mentioned the problem of local recurrence versus multiplicity. Rankin<sup>5</sup> informs me that he has attempted secondary removal in some cases and quotes Judd as having made similar attempts, with little success. This is to be expected but should not lead to absolute denial of any possible chance of further relief or palliation to be obtained by secondary procedures.

Before multiple carcinomas can be classified as separate and distinct lesions, Billroth's postulates have to be considered: (1) The two growths must show distinct histologic differences, which must be so pronounced as to exclude the possibility that they are of the same origin but in different stages of development, (2) each growth must spring from its parent epithelium, and (3) each growth must be held responsible for its own group of metastatic growth. Mercanton<sup>6</sup> added to these postulates the following qualification: "If after removal of two carcinomas the patient remains free from disease, the two growths must have been inde-

growth occurred at a point distant from the original lesion after a lapse of many years, such tumors must reasonably be classified as new and independent lesions.

There have been but few such cases reported in surgical literature. Klingenstein<sup>7</sup> reported a case in which partial colectomy for carcinoma of the transverse colon was done in 1920, of the sigmoid in 1926, and of the ascending colon in 1934. Pfeiffer,<sup>8</sup> in discussing this case, stated that such an instance of successive independent carcinoma of the bowel was unique in his personal experience. Barga and Rankin<sup>9</sup> have reported a case of three successive carcinomas of the colon followed by sarcoma of the uterus. Dowden<sup>10</sup> relates a case of carcinoma of the pelvic colon which he resected, followed in three years by recurrence in the rectum, for which colostomy was done. Subsequently in one year there was a malignant stricture of the small intestine, which he resected. This patient died six years after the first operation from recurrence at the colostomy opening. Lilienthal<sup>11</sup> wrote of "cancer tendency" in reporting a case of carcinoma of the colon occurring in a patient nearly twenty years after extirpation of a similar tumor. Other than these brief reports of cases recurring after a lapse of years there has been no extensive series reported in the literature, and it is hoped that this report will result in the compilation of those in which operation has been performed so that more light may be thrown on the advisability of reoperation in such cases.

#### REPORT OF CASES

CASE 1.—W. J. K., a man, aged 51, was brought into the DePaul Hospital Dec. 30, 1931, in an acutely ill condition. He stated that in the first part of November 1931 he had noted for the first time that the bowels were constipated. On the advice of neighbors and through reading advertisements, coupled with suggestions heard over the radio, he had taken coarse cereals such as bran flakes to give more roughage in the bowel. He had little success with this and found it necessary to take an occasional dose of epsom salt to secure adequate elimination. The constipation became gradually worse, yet he persisted with the roughage and bran until the abdomen became swollen and distended with gas. He was nauseated and vomited; there was absolutely no bowel movement or passage of flatus for a period of forty-eight hours prior to his admission to the hospital. On examination he was in generally good physical condition. The blood pressure was 130 systolic, 80 diastolic. The urine was normal. The erythrocytes numbered 4,500,000 per cubic millimeter. Hemoglobin was 85 per cent Sahli. The Kline reaction was negative. A plain roentgenogram of the abdomen revealed an enormously distended large intestine with some distention of the small intestinal coils. The cecum could be outlined as a greatly distended pocket of gas. A diagnosis of obstructive lesion of the large intestine was made and immediate cecostomy was advised. The patient was prepared with intravenous infusion of saline solution.

Operation was performed December 30, under 200 mg. of procaine crystals dissolved in 3 cc. of spinal fluid. The incision

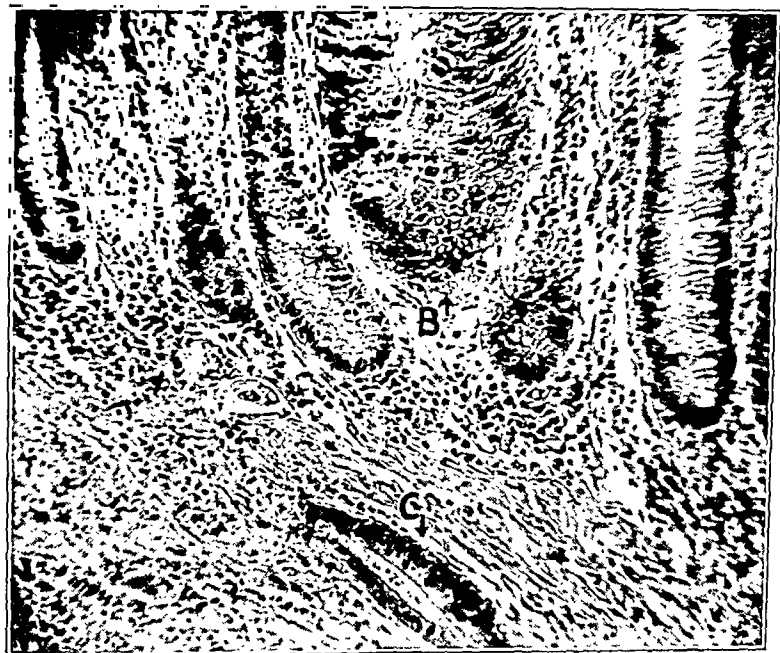


Fig. 3 (case 1).—Section of mucosa shown in figure 2 under high power. "Transition" of hypertrophic colon glands into malignant glands in the "recurrent" carcinoma. Note the piling up of epithelium, the atypical arrangement of the cells and the hyperchromatic nuclei in gland B. There are several mitotic figures among these cells. Gland C represents a malignant gland that has penetrated into the submucosa.

pendent else there should have been other metastasis." It is evident that in carcinomas arising from the intestinal epithelium the first of Billroth's postulates cannot well be fulfilled. Moreover, since carcinomatous degeneration of multiple intestinal polypi is entirely likely, it seems that this postulate need not be fulfilled in identifying multiple independent carcinomas of the intestine. Thus it may be postulated that growths which return at the site of operation, no matter what the intervening length of time, may be open to the question of difference between true recurrence or of a new independent primary tumor actuated by the identical stimuli that produced the first one. The latter hypothesis would seem to hold wherein the second growth had all the gross and microscopic characteristics of an independent neoplasm. Such was apparently the fact in case 1. In those instances in which the secondary or multiple

7. Klingenstein, Percy: Multiple Carcinomata of the Colon, *Ann. Surg.* 102: 1079-1084 (Dec.) 1935.

8. Pfeiffer, D. B., in discussion on Klingenstein.<sup>7</sup>

9. Barga, J. A., and Rankin, F. W.: *Ann. Surg.* 91: 589 (April) 1930, case vi.

10. Dowden, J. W.: Carcinoma of Pelvic Colon: Resection Three Years Later, Recurrence in Rectum: Colostomy One Year Later, Carcinomatous Stricture, Small Intestine: Resection, Carcinoma at Colostomy Opening: Death Six Years After First Operation, *Edinburgh M. J.* 19: 181-183 (Sept.) 1917.

11. Lilienthal, Howard: "Cancer Tendency" in Large Intestine: Carcinoma of Colon: A Case Occurring Nearly Twenty Years After Extirpation of a Similar Tumor, *M. Times* 43: 223, 1915.

5. Rankin, F. W.: Personal communication to the author.

6. Mercanton, F.: *Rev. méd. de la Suisse Rom.* 13: 173 and 229, 1893.

was made in the lower right quadrant and the cecum presented itself distended to the size of a football. The gas was permitted to escape by puncturing the cecal wall with a needle and then a cecostomy was made, a number 24 colon tube being inserted in the bowel after the method of Witzel. The colon tube was brought out through a small stab incision lateral to the main incision, which was closed in anatomic layers without drainage.

The patient's subsequent course was quite satisfactory. Irrigation of the cecostomy opening with copious quantities of water brought forth large amounts of bran that had been impacted along the bowel all the way down to the pelvic colon, which proved to be the site of the obstruction as determined by subsequent examination with the barium sulfate enema. When the bowel had been thoroughly cleansed and had resumed its normal caliber and tonus, resection of the growth was elected. Operation was done Jan. 14, 1932, again under spinal anesthesia. The growth was annular and constricting in type, situated in the pelvic colon. There was no evidence of metastasis in the liver or grossly in the regional lymphatics. A segment of colon approximately 6 or 7 inches (15 or 18 cm.) was resected, a wide margin of normal appearing and normal feeling intestine being taken above and below the growth. Because the bowel was somewhat redundant, this was easily accomplished. A wedge-shaped piece of mesentery including the regional lymph nodes was included and removed in one piece in toto. An end-to-end anastomosis was performed, Dulox catgut reinforced with linen being used. The abdomen was closed in layers. The cecostomy tube was permitted to remain for purposes of decompression. The patient made an uneventful recovery; the wound healed by first intention and the cecostomy tube was removed on the sixth day after he had several normal bowel movements. The cecal fistula soon healed and the patient was dismissed from the hospital in good condition on the thirtieth day following his initial admission.

His subsequent course was quite interesting. A barium sulfate enema, March 30, showed a normal appearance with smooth adequately calibered bowel at the juncture of the iliac and pelvic colon. The man had gained in weight, resumed his occupation and considered himself well. In October 1934, twenty-two months after his operation, he returned with symptoms of constipation similar to those he experienced prior to his initial illness. Proctoscopic examination showed nothing abnormal. A barium sulfate enema, however, disclosed evidence of obstruction at the juncture of the iliac and pelvic colon with a filling defect and palpable mass. The manifestations were considered to be characteristic of carcinoma and immediate reoperation was advised and accepted. Routine examination of the blood and urine showed them to be normal. The man weighed 177 pounds (80 Kg.) and appeared to be in the best of health.

Secondary operation, October 15, through a left rectus incision, again with spinal anesthesia, revealed a napkin-ring type of growth identical in appearance with the one previously encountered. After mobilization of the tumor it was possible to resect it with approximately 2 inches (5 cm.) of normal mucous membrane on either side of the malignant stricture, a segment of bowel being resected again about 5 or 6 inches (13 or 15 cm.) in length. An end-to-end anastomosis was made and all raw surface was peritonealized. A segment of the mesentery was again removed. Careful preliminary exploration of the abdomen did not reveal any sign of metastasis in the liver or any peritoneal surface. A cecostomy was not deemed necessary. The incision was closed in layers, a small Penrose cigaret drain being left down to the suture line lateral to the intestinal wall.

The patient again had an uneventful convalescence. He has remained well to date, and repeated examinations of the stool for occult blood and examination of the bowel by barium sulfate enemas have failed to disclose any further evidence of recurrence (figs. 1, 2 and 3).

CASE 2.—C. K., a man, aged 54, came to the attention of Dr. H. W. Soper in July 1917. His chief complaints at that time were diarrhea, loss of weight, tenesmus, and mucus in the stools. In his youth he had contracted a hard chancre, for which vigorous treatment had been given. On physical examination he appeared anemic and acutely ill. The erythrocyte count was 3,250,000 and the hemoglobin (Sahli) was 35 per cent. There was a palpable mass in the right lower quadrant.

A barium sulfate enema revealed a filling defect at the cecum. *Endamoeba histolytica* was found in the stools. A diagnosis of carcinoma of the cecum and amebic dysentery was made and he was referred to the Mayo Clinic for surgical treatment. October 9, Dr. W. J. Mayo removed the cecum, ascending colon and terminal ileum. The lesion was described as an adenocarcinoma of the cecum and ascending colon with involvement of the regional lymph nodes, which were removed. Because of this a poor prognosis was given.

During the intervening years between 1917 and 1930 the patient had been observed at frequent periods by Dr. R. W. Mills, who checked the colon for recurrence by means of barium sulfate enemas. They were consistently negative. After the death of Dr. Mills in 1924 the man did not return as frequently as formerly but considered himself quite well.

In the fall of 1929, at the age of 68, because of bleeding from the large bowel, he was subjected elsewhere to hemorrhoidectomy. Immediate recurrence of notable bright red bleeding in the stools following this procedure led him to consult Dr. Soper for determination of the source of the hemorrhage. Examination of the patient at this time showed him to be in remarkably good general condition. There were 4.75 million erythrocytes per cubic millimeter in the blood, and hemoglobin (Sahli) 85 per cent. Occult blood was present in the stools



Fig. 4 (case 2).—Microscopic section showing a primary pedunculated papillary adenocarcinoma arising in the transverse colon thirteen years after the removal of an ulcerating adenocarcinoma of the cecum with lymph node involvement. This tumor shows an abrupt transition of hypertrophic into neoplastic epithelium, A. The carcinoma begins in the mucosa and extends deeply into the submucosa and to a less degree into the muscularis. This is distinctly a primary carcinoma. Examination of the colon at both operations failed to reveal the presence of polyps.

(guaiac test). A barium sulfate enema revealed a small filling defect in the transverse colon just distal to the splenic flexure. A diagnosis of carcinoma of the transverse colon was made and the patient was advised to submit to immediate operation.

Operation (J. W. T.) was performed Jan. 28, 1930, at St. Luke's Hospital under spinal anesthesia induced by 200 mg. of procaine crystals. An upper left rectus incision was made and the liver first explored for metastases. None were found. The peritoneal surfaces were likewise free. The site of the previous resection (done in 1917) was quite free from adhesions. In the distal transverse colon a carcinoma the size of a dollar (38 mm.) was found. The wall of the bowel was free from extension to the peritoneal surface. The segment of bowel containing the carcinoma was freed, together with a fan-shaped wedge of mesentery and the freed loop of intestine fixed in Rankin's clamp and the involved segment of intestine severed with the actual electric cautery. The ends of the intestine were reunited in the aseptic manner described by Rankin by suturing the intestinal walls together with Dulox catgut over the clamp. The line of anastomosis was further protected by reinforcement with silk sutures, and additional protection was supplied by placing adjacent fat along the suture line fixed by interrupted silk sutures. The rent in the mesentery was

repaired and the abdomen was closed in layers without drainage. The postoperative course of the patient was uneventful, with the exception of a slight superficial wound infection.

The patient's subsequent course has been quite satisfactory. Repeated examinations of the stools for occult blood have always proved negative. The barium sulfate enema test shows that there is perfect canalization of the lumen of the colon with a good smooth contour of the colonic wall at the site of anastomosis, with the caliber of the lumen the same size as that of the rest of the intestine in the transverse colon. During the interim the patient has lived a useful life and was forced to retire from his occupation owing to the development of coronary sclerosis with symptoms of angina pectoris. He was still living in a fair degree of comfort in 1936 at the age of 75.

CASE 3.—M. B., a man, aged 36, came to the attention of Drs. Soper and Mills in 1918. He complained of pain in the midepigastrium radiating in all directions. The pain came on after eating and lasted for about fifteen minutes, cramplike in character. The bowels had been constipated. His weight was 137 pounds (62 Kg.), a loss of nearly 20 pounds (9 Kg.). These symptoms had been progressing for approximately one year. There had been no blood noted in the stools. Examination of the urine was negative. The erythrocyte count was 4,000,000. Hemoglobin (Sahli) was 60 per cent and the Wassermann reaction was negative. Gastro-intestinal x-ray examination by Dr. Mills revealed a filling defect in the proximal transverse colon.

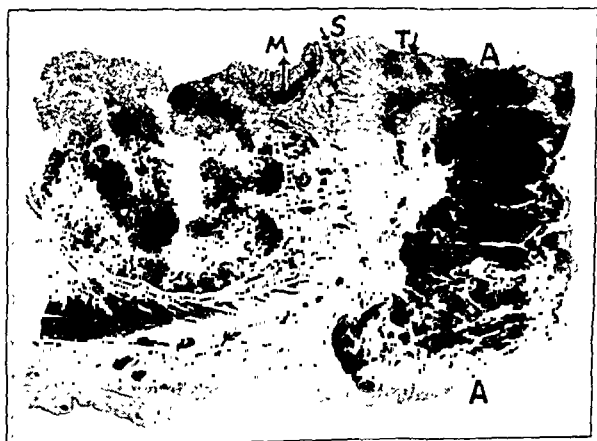


Fig. 5 (case 3).—A "true" recurrence of a poorly differentiated carcinoma of the colon in which a large cancerous mass (A) remained behind in the serosa after an incomplete resection nine years previously. The tumor has extended from the serosa, through the muscularis into the submucosa, and finally into the otherwise normal mucosa. The dark areas (M) are masses of cancer cells that have invaded the base of the otherwise normal mucosa. S shows similar masses in the submucosa and T shows masses that have invaded the muscularis. The invasion of the muscularis is considerably more extensive than in the submucosa. The longitudinal muscle layer is almost completely destroyed by the cancer.

The first operation, Nov. 20, 1918, at St. Luke's Hospital by Dr. H. G. Mudd, through a right rectus incision revealed a large tumor of the transverse colon. The lesion was annular, surrounding the entire intestine and attached slightly to the gallbladder. The intestine was freed from its mesentery for 3 inches (7.5 cm.) above and below the lesion, which was then severed between clamps with the actual cautery. The ends of the bowel were turned in and a lateral anastomosis was made. There was no evident lymph node involvement. Two nodes were removed and proved to be simple hyperplasia of inflammation. The lesion itself was an adenocarcinoma (sections of tissue not available).

The patient remained well and resumed his work as a pedler. He returned for examination from time to time and in February 1927 a small mass was found in the right upper quadrant. His weight then was 147 pounds (66.7 Kg.) and his general condition good. The erythrocytes were 4,000,000 and the hemoglobin (Sahli) was 78 per cent. There was a four plus guaiac test for occult blood in the stools. Gastro-intestinal x-ray examination revealed a carcinomatous filling defect in the distal ascending colon, the lesion appearing to be on the proximal side of the anastomosis made in 1918. The urine was normal and the Wassermann reaction was again negative. Surgical exploration was recommended.

At a secondary operation, March 15, 1927, at St. Luke's Hospital the abdomen was opened to the left of the old scar. There was a large mass in the region of the ascending colon, adherent to the liver, abdominal wall, gallbladder, duodenum and head of the pancreas. The gallbladder contained stones. After careful dissection of the adhesions the mass was mobilized and the ascending colon and a portion of the transverse colon were resected together with the terminal ileum, cecum and appendix. As many as possible of the regional lymph nodes were removed. The continuity was added, a 20 French catheter being placed into the terminal ileum. A piece of omentum was used to protect the anastomosis. One Penrose drain was left in the upper angle of the wound, which was closed in layers around the drain.

The patient made an uneventful recovery from this procedure after overcoming the usual postoperative hazards of shock and wound infection but encountered difficulties in October 1927, when he suffered an attack of acute small intestine obstruction, which made it necessary to reopen the abdomen to relieve the obstruction produced by an adhesion band. Following this procedure he has remained well, and when last heard from in 1936 he was in good general condition.

#### COMMENT

These three patients present entirely different phases of the clinical problem under discussion. There was no doubt about the second diagnosis of recurrence in case 1, or possibly a new primary carcinoma similar to the initial lesion. In case 2 one cannot regard the lesion of the transverse colon occurring thirteen years after the resection of the right half of the colon as a true recurrence. This growth should be classified as a new primary carcinoma of the bowel (fig. 4). Case 3 is undoubtedly an example of true recurrence. The fact that these three patients survived secondary resections of the colon and have led useful lives subsequently should encourage one to make some effort to remove recurring or multiple growths from the colon instead of assuming an attitude of utter hopelessness when faced with such situations. One is not always rewarded with such success, for in two other personal cases in which symptoms of weight loss, occult blood in the stools, and demonstrable filling defect in the colon led to reexploration of the abdomen, hopeless metastasis in the liver defeated the attempts to forestall the inevitable. Such experiences should not, however, deter one from making the attempt in every case in which the general condition of the patient justifies it.

#### SUMMARY AND CONCLUSIONS

1. Recurring carcinoma of the colon is not invariably a hopeless lesion and should not be prognosticated as such.
2. Multiple malignant lesions of the colon are probably not as rare as commonly believed. They may occur simultaneously or develop after a period of many years.
3. A more positive attitude of mind in the diagnosis and surgical management of malignant lesions of the gastro-intestinal tract should be encouraged to afford earlier recognition of primary lesions and to lend hope for possible surgical cure or further palliation for secondary neoplasms.

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#### ABSTRACT OF DISCUSSION

DR. CLAUDE J. HUNT, Kansas City, Mo.: Two points stand out in this presentation worthy of emphasis: first, the importance of early operation in primary or secondary malignant lesions of the colon; second, that more than one carcinoma may exist simultaneously or at widely separated periods of time in the colon, which are separate and distinct and have no relation to one another. Early operation on a primary or secondary

growth offers two distinct advantages to the patient: the opportunity of successful removal of the lesion, as was accomplished in these cases, and the alternative of sometimes anastomosing around an inoperable mass, thereby detouring the fecal current and limiting to a minimum subsequent infection and hemorrhage and eliminating a later colostomy with its disagreeable features. Infection, hemorrhage and secondary anemia contribute much to the discomfort of the patient and hasten the progress of the disease; thus, with a detoured fecal current patients live much longer and are more comfortable, and obstruction is less likely. I cannot fail to speak of the merits of an anastomosis of this nature as a palliative operation worthy of great consideration. By such a procedure some indurated inflammatory masses may recede and subsequently become operable. The cases in this presentation are most probably secondary independent growths. Primary recurrence would have manifested itself by local recurrence at or near the site of the original bowel lesion and would have shown extensive local metastasis as well as binding down of the bowel at the primary site of extensive adhesions and contractures. My experience with recurrent carcinomas of the large bowel has been that they are decidedly inoperable, owing to local extension and to visceral and glandular metastasis. I have done an anastomosis around the inoperable mass when possible. When obstruction was present or the location of the lesion prevented anastomosis, colostomy was performed. Considering these as secondary lesions, one must speculate on the possible causative factor of multiple carcinoma of the colon. It is not likely that carcinoma develops on normal colonic mucosa but that some abnormal benign lesion, as adenomas or polypi, plays a part in their development. These benign lesions are known to be commonly distributed along the colonic mucosa. Bardenhauer and others first spoke of the malignant change in adenomatous cells, and Rankin and Fitzgibbon demonstrated that certain colonic polypi had a tendency to undergo malignant change. Many such cases are on record. Billroth's postulates as to secondary malignant lesions are interesting but hardly tenable for colonic carcinoma.

DR. C. F. DIXON, Rochester, Minn.: Dr. Thompson's presentation interests me. His material is worthy of being made a matter of record, as it emphasizes that the development of a malignant process at the site of a former operation for neoplastic growth does not necessarily indicate that the patient is doomed. Whether such a lesion is a recurrence or another primary growth is a matter of conjecture. It is my opinion that, if a patient has no sign of local recurrence of the disease for two or three years, any malignant tumor that develops subsequently should be considered to be an independent process. However, it has been shown that rests of malignant cells may remain more or less dormant for a number of years. The problem of particular interest in this discussion concerns the feasibility of subsequent resection because of carcinoma of the bowel. If there is no evidence of metastasis to the liver and the patient's condition is "fair" or "good," I feel that an attempt should be made to remove the malignant process by resecting the intestine. When there is doubt about the condition of the liver, the functional tests will be of great value in reaching a correct decision, since there would certainly be an appreciable impairment of the function of the liver in most cases in which marked metastasis to the liver has occurred. My feeling regarding the justification of subsequent resection of the intestine for carcinoma is substantiated by the results obtained in eight cases in which the patients' lives were extended for years by multiple operations in which segments of the colon were removed. Two patients had several resections of the bowel and lived about two and nine years respectively, after the last operation, but in neither case was death due to a malignant process. I agree with Dr. Rankin and Dr. Hunt that rehabilitation of the patient before operation is of inestimable value; however, I do not subscribe to Dr. Rankin's present idea that preoperative vaccination is of no value, nor do I concur in his opinion that the administration of vaccine is a dangerous procedure. At the clinic we have employed intraperitoneal vaccination as a measure for the prevention of peritonitis in more than 3,000 instances, and since its use the death rate from peritonitis has decreased appreciably. As closely as we are able to estimate, we now lose one patient from peritonitis where formerly three

succumbed to it. Of course the technic in carrying out any surgical procedure is important, but I am certain that my surgical technic is no better than that of those of the same institution who have gone before me; nevertheless, the mortality has been greatly reduced. It would hardly seem fair to say that intraperitoneal vaccination is dangerous, since in 3,000 or more instances there has not been a single death that could be attributed to that procedure.

## THE TREATMENT OF PRIMARY MALIGNANT CHANGES OF THE BONE

BY RADICAL RESECTION WITH BONE GRAFT REPLACEMENT

FRED H. ALBEE, M.D.  
NEW YORK

The treatment of malignant growths of the bone, especially primary bone sarcoma, is still desperately unsatisfactory, despite strenuous efforts to its improvement. Most radical amputations, preceded and followed by x-ray and radium therapy, are able to secure lasting results in only a small number of cases. Metastases in the lungs may develop within a longer or shorter time after the amputation, quite often without involvement of the regional lymph nodes.

The uncertainty of the outcome in these radical and crippling operations, the severe psychic trauma that they usually represent for the patient, the difficulty of applying an artificial limb after exarticulation in the hip joint, all have led to less radical surgical procedures, if possible, applied earlier, which, still aiming at eradication of the malignant tumor, are an attempt to save the extremity in its usefulness.

I do not claim any miracles. I think that the therapeutic problem of malignant growths of the bone is still unsolved. Time and greater clinical material will have to show whether my method is definitely superior to any other actually in use, but from a relatively small number of cases I obtained the certain impression that it can compare quite favorably with the surgical routine treatment and was so decidedly advantageous in some of the cases that its value cannot be underestimated. The method consists of a radical resection of the tumor followed by a plastic bone graft replacement operation. I am presenting here briefly thirteen cases of malignant growths of the bone. Three involved the shoulder region, seven the lower end of the femur and three the shaft and lower end of the tibia.

### SHOULDER REGION (THREE CASES)

The following case has been reported in a previous article (1921) in which special emphasis was put on the operative technic of restoration of shoulder joint function. The case is presented again here with a follow up of almost seventeen years.

CASE 1.—A woman, aged 25, complained of constant pain in the left shoulder, especially at night, and reported a slight loss of weight. The roentgenogram revealed a destructive lesion in the upper third of the shaft of the humerus with expansion into the soft tissues. The clinical and x-ray diagnosis of osteosarcoma was made and later on confirmed and specified histologically as osteosarcoma with malignant activity. Surgical removal was decided on and performed.

The operation consisted in the resection of the head and 5 inches (12.5 cm.) of the upper end of the shaft with replacement by a long piece of the fibula. More in detail, the opera-

tive procedure was as follows: The patient was placed on the Albee table and traction was applied to the left arm, which was kept in the same position throughout the entire operation. The tumor was exposed and a frozen section made. The soft parts were separated from the bone by blunt and sharp dissection, care being taken to keep well outside the area of the new growth. The shaft was completely severed by means of a Gigli saw, about  $4\frac{1}{2}$  inches (11 cm.) from the upper extremity of the humerus, well below the tumor. After removal of the upper fragment, the upper end of the humeral shaft was prepared for the reception of the fibula transplant. The marrow cavity was slightly enlarged and by means of the twin saw a groove was cut in the shaft for about one-half inch (1.3 cm.). The upper end of the fibula was then removed through a posterior incision (because the fibula can be exposed much more easily from behind and the peroneal nerve can be brought better in safety). With the Gigli saw a piece of the fibula was removed so as to exceed the length of the removed humeral fragment for about 1 inch. The angular projections on the surface of the fibula shaft were roughly trimmed down

pain in the shoulder on motion. The pain could be relieved by physical therapy and especially by rest. She was last seen about seventeen years after operation. The shoulder was found somewhat lax and the left arm was considerably shorter than the right, but there was good function of the arm; the patient was even able to play the piano. Roentgenograms four years after operation showed that a part of the fibula had become resorbed at the site of insertion into the humerus, but there was sufficient periosteal bone formation around this area to prevent pseudarthrosis. Another picture, seven years after the operation, revealed good consolidation between graft and host. The head of the fibula was still well implanted below the acromion. There was no sign of local recurrence of the tumor.

The same form of plastic shoulder repair after radical excision of the upper end of the humerus was carried out in other instances.

CASE 2.—A girl, aged 14 years, had been complaining of some pain in her right shoulder for about half a year; she



Fig. 1 (case 2).—Giant cell sarcoma, with the upper end of the humerus resected and replaced by fibula grafts. No signs of tumor recurrence.

with the motor saw, and the diameter of the shaft was thus made slightly smaller at the lower end so that it might be easily inserted into the humeral shaft. Then the fibula transplant was driven into the humerus until the head just engaged under the acromion process, while traction was exerted on the arm in order to restore the normal length of the upper arm. The upper end of the humerus was drilled in such a manner that graft and host were pierced completely. A kangaroo tendon was passed through the drill canal and tied securely.

The musculature was quite well preserved with the exception of the distal end of the pectoralis major, which had been resected for about one-half inch (1.25 cm.) to keep away from the tumor. It was just possible to dissect out the various muscles, which were fastened each in the place of its normal insertion on the head and neck of the fibula by means of small kangaroo tendons passed through drill holes.

The arm was immobilized in a plaster cast for three months. There was solid bony union and the patient was encouraged to use the arm. She slipped and fell six months after operation. Roentgenograms revealed a fracture through the fibula graft. The arm was again immobilized and firm bony consolidation was present about ten weeks later. Under physical therapy she regained so much use of the operated arm that she could play golf with it and drive a car. She complained of occasional

recently fell and since then the pain in the shoulder had been aggravated. Roentgenograms (fig. 1) at the time of admission showed a destructive lesion at the upper third of the humerus with involvement of the epiphysis. The lesion appeared multiloculated at the periphery, cystic in the center. The cortical bone was perforated on the inner side and the surrounding soft tissues were invaded. The picture was suggestive of a giant cell tumor with malignant activity. Radical resection with implantation of the upper end of the fibula was performed. The pathologic report was giant cell sarcoma showing malignant activity. The patient made a very good recovery. She was seen last two years and nine months after the operation. There were no signs of tumor recurrence. She was complaining of occasional pain in the shoulder, mainly on motion. There was active abduction of the shoulder for about 45 degrees. Passive motion was 75 degrees and active external and internal rotation about 20 degrees. There was no shortening of the extremity.

Roentgenograms on different occasions, up to twenty-eight months after the operation, showed excellent bony union at the site of the implantation. The head of the fibula resting against the lower surface of the acromion revealed some structural changes that suggested functional adaptation. There was considerable increase in the thickness of the grafted fibula, and

at the site of insertion into the humerus a considerable amount of periosteal bone had formed or produced a sharp spur formation. There were absolutely no signs of tumor recurrence almost three years after the operation.

CASE 3.—A youth, aged 17, complained of a sclerosing osteogenic sarcoma of the upper metaphysis of the humerus and a typical sunray structure at the periosteal surface. The upper end of the humerus was resected and a fibula graft inserted. Two months after the operation there were metastases to the spinal cord with flaccid paralysis, and the patient died. There was no local recurrence.

#### KNEE REGION (SIX CASES)

The most frequent localization of bone sarcoma, the region of the knee, and especially the lower end of the femur, was represented in the series by six cases. The localization of the tumor close to or within the epiphysis many times requires the resection of the knee joint. This was done in three cases, and in only one case, in which the tumor was more of diaphyseal localization, could the joint and the lower epiphysis of the femur be saved. The operative procedure in the four was as follows: Under tourniquet the kneejoint is opened by a split patella incision, a motor saw being used. The lower end of the femur is exposed. Great care has to be taken to keep away from the tumor, especially if there is already invasion of the surrounding soft tissues. With a Gigli saw the distal portion of the femur is resected and the upper joint surface of the tibia is freshened by removal of the entire joint cartilage. A strong sliding bone graft is taken from the crest of the tibia of sufficient length to prevent shortening. It is firmly anchored into the distal end of the femur and the proximal end of the tibia with the use of kangaroo tendons passed through drill holes. The sliding graft is reinforced by at least three sliver grafts, which are placed obliquely around so as to form a pyramidal

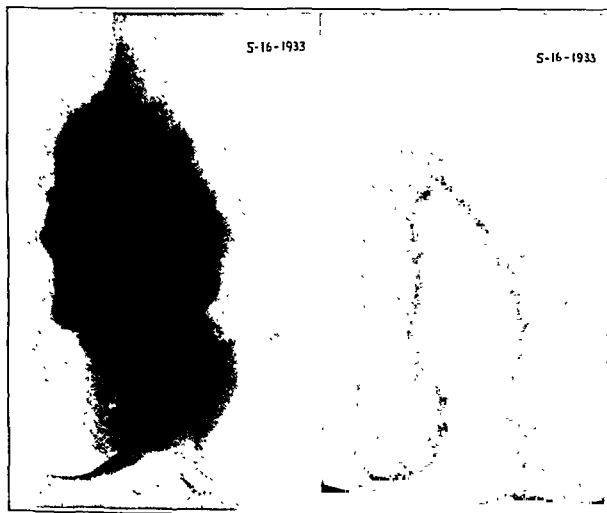


Fig. 2 (case 4).—Osteogenic sarcoma of the lower end of the femur.

structure with the base at the upper surface of the tibia. The two halves of the patella are also used for reinforcement. The soft tissues are then closed tightly and a hip spica cast used for immobilization.

CASE 4 (fig. 2).—A woman, aged 20, was in a train accident; the right knee was caught between the train and the platform. Two or three weeks later she noticed a small lump on the inner aspect of the knee. She was operated on and a tumor was found and pronounced osteofibroma. She received high voltage roentgen treatment but the tumor recurred rapidly.

Roentgenograms at the time of admission showed a huge densely calcified tumor at the posterior aspect of the lower end of the femur infiltrating the popliteal fossa. The diagnosis was osteogenic sarcoma of periosteal origin.

The lower end of the femur was resected together with the knee joint and replaced by a heavy tibial bone graft. The pathologic report confirmed the roentgenologic diagnosis. The patient was immobilized in plaster casts for one and a half years. More than two and one-half years has elapsed since the operation; the legs are of even length and she is in very good health

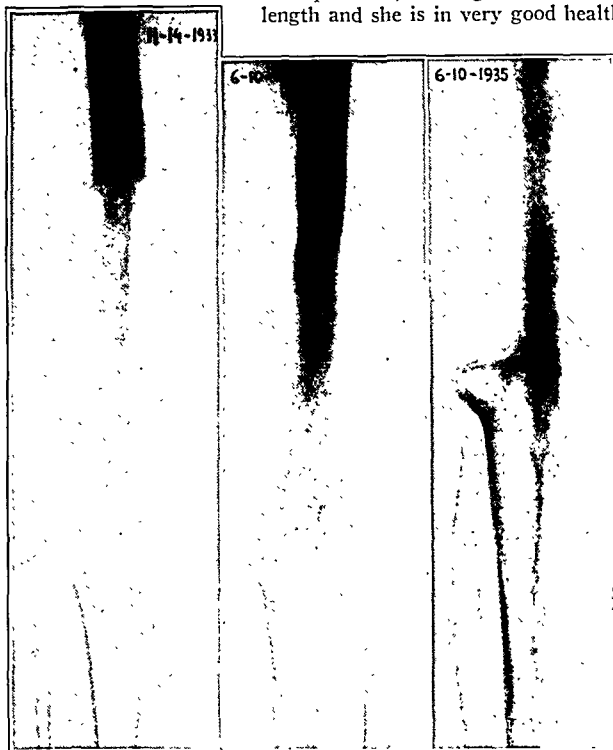


Fig. 3 (case 4).—Tumor resected and replaced by sliding tibial bone graft. Note the marked hypertrophy of the graft.

and walks very well. Roentgenograms show a remarkable hypertrophy of the transplanted grafts, and the resected portion of the femur has regenerated to almost the normal thickness (fig. 3).

CASE 5.—A youth, aged 20, had an osteogenic sarcoma of the lower end of the femur, mainly of the periosteal type. The same procedure as in the former cases was carried out and a "gun-pyramide" of tibial bone grafts was erected. The grafts took very well, and only a part of the patella sloughed out. One and a half years has now elapsed since the operation, and the patient is able to put some weight on the extremity. His general condition is very good. The last roentgenograms show very good osteogenesis around the bone graft. There has been a telescoping of the graft along the tibial gutter, which is responsible for a shortening of more than 1 inch. Because of this, the technic has been changed to an end to end mortise of graft into the tibia. There are no roentgenologic signs of tumor recurrence.

CASE 6.—A man, aged 24, with chondrosarcoma of the lower end of the femur, was treated in the same way. The wound over the tibia became infected. A guillotine amputation was performed through the upper third of the femur. Three months after the operation the patient's general condition is very good. There are no signs of local recurrence or tumor metastases.

CASE 7.—A girl, aged 8 years, had a highly malignant osteochondrosarcoma of the lower third of the femoral diaphysis without involvement of the epiphysis. The problem was different from the three cases just reported. The radical resection of the lower end of the femur with its epiphyseal cartilage together with the knee joint would have resulted in a marked shortening in case the patient should survive the operation for years. It was decided, therefore, to resect just the diseased

portion of the diaphysis but to leave the lower epiphyseal cartilage and the lower epiphysis intact. This was done, and a tibial graft was firmly anchored into both fragments of the femur, reinforced by some sliver grafts. The grafts took very nicely, but the patient had a very stormy postoperative course, with several pyemic abscesses and peroneal palsy of the operated leg. She finally recovered and is now able to walk in a short leg brace to prevent foot drop. Frequent roentgenologic control examinations have revealed a very rapid enlargement of the bone graft at the site of resection, and more than two years after the operation the regeneration has led to normal thickness of the bone. There is shortening of the left leg for about 1 inch. This is mainly due to an anterior bowing of the femur and to the accidental dislodging of the bone graft from its femoral mortise by an assistant dropping the leg after the skin wound had been closed at operation. In spite of this, the graft united promptly to the femoral fragment. There was no recurrence.

CASE 8.—A man, aged 32, had a history of having been operated on at Beekman Street Hospital for a giant cell sarcoma of the lower end of the left femur in March 1931 in which the tumor was thoroughly curetted out and the cavity filled with bone chips taken from the tibia. This was followed by high voltage roentgen therapy. On the day of examination at my office there was a marked recurrence of the tumor, as evidenced in the roentgenogram by a large mass at the external femoral condyle and edema. There was marked nocturnal pain and a loss of 15 pounds (6.8 Kg.). The surgical indication was amputation or wide resection. Resection and replacement with a massive tibial bone graft were done at the New York Post-Graduate Hospital Jan. 21, 1932. The patient did not follow instructions and under direction of another physician he left off the splint and broke the graft by walking without support. A union of the fractured graft was obtained. There was no recurrence four years and four months after resection.

CASE 9.—A youth, aged 18, had three months before admission hit his right knee against an iron shelf. This was followed by the knee slipping, and an exploratory arthrotomy was done. There was no internal derangement of the knee joint. Three months after the operation he began to have nocturnal pain, and a pronounced swelling appeared just above the knee. Roentgenograms disclosed what was diagnosed as periosteal sarcoma extending from about 2 inches above the location of the epiphyseal plate upward for about  $3\frac{1}{2}$  inches (8.8 cm.). A biopsy examination resulted in a diagnosis of chondrosarcoma. About 6 inches (15 cm.) of the shaft of the femur was resected, leaving the epiphyseal cartilage and the condyles of the femur intact. A tibial graft of sufficient length and strength was mortised into the center of the upper cut surface of the lower femoral fragment and into the marrow cavity of the upper femoral fragment, the muscles being pulled about the graft carefully. It has now been six months since the operation, and the graft has proliferated. There is no recurrence.

CASE 10.—A girl, aged 8 years, had a tumor (round-cell sarcoma) of six months' duration involving the lower third of the right femur, extending upward from just above the epiphyseal plate. It has been rapidly enlarging in spite of high voltage roentgen therapy and Coley's serum. Resection was done precisely as in case 9. The tibial graft which had to be about  $8\frac{1}{2}$  inches (21.5 cm.) long because of the extensive amount of the femur resected, was mortised into each fragment of the femur. The lower three fourths of it was, however, split with a motor saw and spread precisely as the upper end of a crutch. Each of the prongs of the graft was mortised into the inner and outer border of the cut upper surface of the lower femoral fragment. The upper end of a second graft was placed in the crotch of the first graft and its lower end mortised into the center of the cut surface of the lower femoral fragment. The muscles were then drawn about and between the grafts with great care. The grafts are proliferating. There is no recurrence after six months.

#### TIBIA (THREE CASES)

CASE 11.—A boy, aged 11 years, had throbbing pain, especially at night, in the left tibia. There was no fever. Roentgenograms revealed some fusiform thickening of the middle

of the diaphysis, with sclerosis and slight haziness of the periosteal outline. There was a difference of opinion as to the diagnosis. The lesion was first considered inflammatory by some of the consultants, and biopsy confirmed this diagnosis. The patient disappeared and returned in two months. In this short space of time the tumor had extended through the biopsy hole in the cortex to such a degree that there was no question of its extreme malignant condition. The pathologic report from the resected diaphysis was osteogenic sarcoma, but the roentgenogram suggested more Ewing's tumor. A radical resection of a good 8 inches (20 cm.) from the shaft of the tibia was performed with the preservation of both epiphyseal plates. The graft became broken at the upper end from too early weight bearing. Double wedge-end grafts with sliver grafts beside the fracture junction were inserted, and a firm anchorage of the graft was finally secured without shortening. Two years after the first operation the graft showed roentgenologically some increase in thickness, and the boy was able to bear full weight. Metastases developed in the lungs and the patient died without signs of local recurrence almost two and one-half years after the first operation.

CASE 12.—A woman, aged 49, with generalized Paget's disease of more than twelve years' duration (and nine years under my observation) suddenly complained of pain and swelling at the lower third of the left tibia. There was a tender tumor mass at the inner and posterior aspect, just below the junction of the middle and lower thirds. The tumor was rapidly growing. Roentgenograms taken in an interval of eight months showed first the very typical signs of advanced Paget's disease of the tibia and then an ossified periosteal tumor with sunray structure.

The tumor was resected (pathologic report: osteogenic sarcoma on the basis of osteitis deformans) and a graft taken from the same tibia was used to bridge the defect. About two months after the operation another tumor developed on the left side of the skull, which was considered another sarcoma formation on top of a Paget skull bone. The tumor compressed the brain, and the patient died with cerebral symptoms three months after resection of the tibia. There was no local recurrence at the tibia.

CASE 13 (fig. 4).—A physician, aged 33, with a giant cell tumor of the lower end of the tibia, was first treated by radical curettage, and sliver grafts were put into the cavity for bone formation. There was definite recurrence of the tumor with resorption of the grafts half a year after the operation, associated with nocturnal pain and loss of weight. At this time, the lower 4 inches (10 cm.) of the tibia was resected and the entire joint cartilage of the upper joint surface of the astragalus was removed. Two cortical grafts were firmly inserted with their marrow surfaces together into the astragalus and tied at its upper end with kangaroo tendons passed through drill holes. The grafts took beautifully. It is now nearly a year after the operation; he is still walking with a caliper brace, but the grafts are strong and much enlarged and full weight can be borne on the extremity, even without a brace. There are no signs of recurrence roentgenologically.

This series of thirteen cases, in which malignant growths of the bone were treated by radical resections and bone grafts, permits, despite its relative smallness, a number of definite conclusions. It shows that it is possible, at least in a number of selected cases, to free the patient from a malignant condition of the bone and to preserve a useful extremity. Case 1, presenting a giant cell sarcoma of the upper end of the humerus, has been followed for almost seventeen years without any signs of tumor recurrence. Doubts on the correctness of the tumor diagnosis are not justified because the diagnosis was made on the basis of several slides by a competent pathologist. The diagnosis—giant cell sarcoma—could, of course, suggest the possibility of a giant cell tumor, an essentially benign lesion of the bone. This possibility cannot be ruled out entirely, either for the first or for the second case. But even if the cases were benign giant cell tumors, they were so

markedly advanced and the surrounding soft tissues were found so invaded at the time of operation that the radical procedure with resection was certainly indicated. A curettage in such a weakened condition of the bone would only have led to pathologic fracture and, without any doubt, to recurrence. I shall discuss the question of benign cell tumor more in detail a little later.

The plastic repair of the shoulder with the upper end of the fibula following radical resection, or following badly infected subcapital fracture-dislocation and defect-pseudarthrosis, has proved to be such a gratifying procedure that I can recommend it highly.

Most of my patients have a follow up of around two and one-half years, which is not long enough to judge lasting results in such cases. All the patients were free

mentioned; in case 8, however, the peroneal nerve had to be resected with the tumor, resulting in a foot drop.

Further clinical observation and richer material will have to show whether this method will secure lasting results in bone sarcoma of high malignancy. It seems to be the method of choice in the so-called benign giant cell tumors, however. Every surgeon of some experience knows that these tumors are by no means always as benign as one would think from the term. On the contrary, they are as a rule very resistant to the routine treatment with curet and caustic substances. Local recurrence following curettage is very frequent. More advanced and extensive cases can hardly be benefited by curettage. These cases, most frequently found at the lower end of the femur, are the ideal cases for resection and the plastic repair with the graft pyramid.

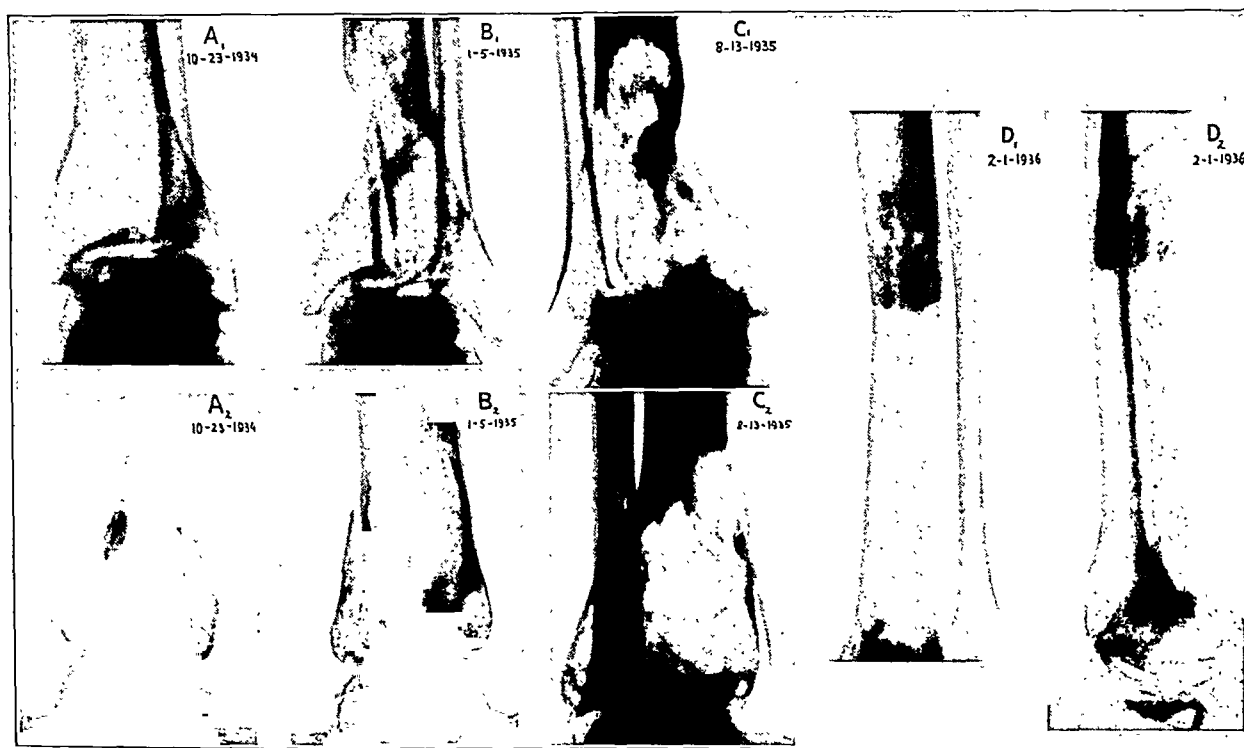


Fig. 4 (case 13).—Giant cell tumor of the lower end of the tibia, first curetted (*B*<sub>1</sub> *B*<sub>2</sub>) with implantation of sliver grafts, and recurrence (*C*<sub>1</sub> *C*<sub>2</sub>). It was then resected and replaced by two cortical bone grafts (*D*<sub>1</sub> *D*<sub>2</sub>) implanted into the astragalus. There was no tumor recurrence.

from tumor in the operative area, although in one death occurred two and a half years after the operation of lung metastases (case 11). Two patients died a relatively short time after the operation, one of metastases to the spine with compression of the spinal cord and flaccid paralysis of the lower extremities (case 3) and in the other, a case of Paget's disease, besides the resected sarcoma of the tibia another malignant tumor of the skull developed with brain compression (case 12). There was no local recurrence in either case. This fact is of considerable interest. It shows that it is possible to remove all the tumor even in very extensive malignant changes of the bones. In tumors of diaphyseal localization in juvenile individuals one may even succeed in preserving the epiphyseal plate and the joint. The danger of blood vessel and nerve involvement is apparently not as great as is commonly stated. In my experience tumors of the upper end of the tibia and fibula show early involvement of the tibial vessels. I could keep away from the main vessels in all cases

I think that in no case of benign giant cell tumor should amputation be performed before the plastic restoration of the resected tumor has been tried, and I also feel that this method should be used immediately, as soon as curettage is followed by recurrence. I am quite convinced that with this procedure a great number of extremities will be saved, many of them it is true with stiff joints, but certainly of better use than artificial limbs. I think it is unnecessary to say that the operation should be performed only by experienced surgeons.

In some of the cases (1, 6 and 8) shortening up to more than 1 inch of the operated extremity took place within the immobilization period.

The extensiveness of the operation, particularly involving muscle and the tendency to postoperative hematomas, which follows the removal of the tourniquet with clot accumulation in the dead spaces, results in a considerable danger of postoperative infection. This occurred in three of the cases, necessitating the amputation of the extremity of one of them; the two

others recovered. I have recently changed the method slightly by implanting the tibial graft in the center of the top of the head of the tibia instead of in front. This prevents the telescoping of the graft along the tibial gutter and it also lessens the difficulty of preventing dead space at the popliteal region. The muscle sleeve can be closed much tighter around the graft and the peril of dead spaces along the graft is diminished. Much painstaking suturing with continuous sutures of muscle tissue about the graft should be done, a curved round point needle being used.

After everything has been said, the most important lesson to be derived from these thirteen cases over a period of seventeen years is that there has been no local recurrence of the tumor. From this point of view the procedure has proved as safe as amputation. In every case amputation was indicated.

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#### ABSTRACT OF DISCUSSION

DR. ARTHUR STEINDLER, Iowa City: One cannot help being impressed in Dr. Albee's paper by the brilliance of his technic. He demonstrates the possibility of substituting by osteoplastic methods for these great defects that arise from radical resection. In a certain percentage of cases of Paget's disease, malignant degeneration occurs. It is noted that in most of these operations the shelling out of the tumor is surprisingly clean and easy. I take it that these tumors were comparatively of a mild degree of malignancy and certainly in the stage before a wide proliferation in the tissues has taken place. My experiences with bone graft replacement in bone tumors are confined exclusively to giant cell tumors and giant cell sarcomas. Everybody knows the difficulties of histologic differentiation between the two types. In addition to this there is the relation of benign bone cyst to giant cell tumor, which is considered a variant of the former by Geschickter. A giant cell tumor at the lower right femur was thoroughly curetted, and the defect, bigger than a man's fist, filled with bone chips, removed from both tibias, which were tightly packed. This tumor consisted of a dense accumulation of giant cells which filled the active center of the tumor, though at the endosteal side of the periphery it was more fibrous and showed a tendency to formation of partially calcified fibrous bone. The roentgenogram showed that most of the implanted bone chips had taken, but the amount was too small to fill the huge cavity. I have seen small cysts completely filled out after curetting and filling in with bone chips. On the other hand, the one experience that I had with a giant cell tumor was instructive. The tumor was in the neck of the femur, where it formed a huge cyst, covered by a paper-thin shell of bone, perforated in places but without infiltration of the soft tissues. The cyst was filled with bloody fluid, probably from recent infarctions, and lined with a wall of granulated tumor tissue. The impression was that of a giant cell tumor with cystic degeneration. The cavity was curetted and filled with a mass of bone chips. The patient did not get well after operation and developed a generalized adenopathy but no metastatic lesion. The roentgenogram showed an extension of the process, and an exploratory operation revealed the upper third of the femur practically gone, the big, blood-filled cavity lined with an irregular wall of tumor tissue, and extensive infiltration of the surrounding soft tissue. The histologic examination now showed a highly malignant giant cell sarcoma. Malignant degeneration of benign bone cyst is reported as a rarity. This singular experience seems to indicate that, gratifying as the results of graft or bone chip replacement may be in cyst or benign giant cell tumors, they are not encouraging in malignant giant cell sarcoma. I mention this merely in relation to the fact that Dr. Albee believes in and has emphasized the radical removal of giant cell tumor because of its potential degeneration, because he thinks that the results of curettement and the filling in of the bone are unsatisfactory. It might well be that this is the case, and this particular experience which I have cited seems to bear out this fact.

#### AIR-BORNE INFECTION

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AND  
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In the dissemination of plant life, the atmosphere is nature's prime sower of the seed and thus vitally affects all living things. Air currents, by gripping the extended surfaces of winged larger seeds and the protuberances of the smaller pollens, lift, transport and release them at their destinations. As the size of particles decreases, the weight decreases more rapidly than the surface area and the tiny spores of molds and fungi require no special adaptation for air travel. Bacteria are even smaller, but since they have no power to invade the atmosphere except in association with other matter, their flight range is determined not by size but by the character of the matter with which they are associated.

"Dust and droplets wafted into the air include bacteria. The number of such temporary passengers on the wing depends upon the kind, the source and conditions which lift them into the air, their survival rate, the air currents which transport, disperse and dilute them within the atmosphere, the rate of deposition and the physical and chemical conditions of their atmospheric environment."<sup>1</sup>

The theater of operation of these phenomena is vast: micro-organisms have been found in polar flights and in the highest penetrations of the stratosphere. We are not concerned with this outer atmosphere except as a source of infinite dilution, and in this paper only the dense layer close to the earth's surface will be considered. Particularly in those semienclosed atmospheres wherein we live, dilution is restricted and the spread of parasites is facilitated. On the other hand, these ventilated spaces are also most subject to human control.

Perhaps a discussion of bacteria in air should begin with the pregnant researches of Louis Pasteur, which inaugurated the science of bacteriology and the germ theory of disease. His classic experiments on spontaneous generation, published in 1861,<sup>2</sup> proved that air was populated with microscopic germs which caused putrefaction and fermentation. This fact seemed to substantiate the universal belief that air was the vehicle of contagion, and for twenty years thereafter this thought motivated the work of Lister<sup>3</sup> and of Tyndall.<sup>4</sup> Strangely enough, the perfection of bacteriologic technic during the last two decades of the nineteenth century, in which the specific agents of disease were identified, disclosed in rapid succession their transmission by other routes without demonstrating in air recognized pathogenic organisms. When Flüge<sup>5</sup> failed

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First part of a paper read before the Harvard University Tercentenary (1636-1936) Symposium on "The Environment and Its Effect upon Man" at the Harvard School of Public Health, Aug. 24, 1936. The second part will appear in the next issue of THE JOURNAL.

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to recover nasopharyngeal organisms on plates exposed farther than a few feet from a person's coughing and sneezing and concluded that they settled out in short distances and in brief time intervals, air-borne infection seemed almost eliminated. Meanwhile, sanitary bacteriology during the next twenty years, by demonstrating general bacterial contamination, seemed to justify the belief that such diseases as could not otherwise be accounted for were spread by direct or indirect contact. In the face of the growing momentum of contrary opinion based on this negative evidence, the case against air was dismissed with a Scotch verdict, and the theory of air-borne transmission of infection was well-nigh abandoned.

During the past five years, certain developments in the technic of air bacteriology at Harvard University have caused a modification of our views regarding the inability of air to transmit infection. The invention of an instrument<sup>6</sup> for the extensive exploration of and the practical experimentation on controlled atmospheres initiated these studies. The development of a technic for producing bacterial suspensions by atomizing cultures into these controlled atmospheres became an important factor in the experimental investigation. The technic so developed provided a means for the study of the dispersion of bacteria in air, and the effect of physical and chemical agents on their viability.

THE EXCHANGE OF NASOPHARYNGEAL FLORA  
BY AIR

*Droplets and Droplet Nuclei.*<sup>7</sup>—Droplets expelled into the air from the nose and throat in sneezing, coughing, and the like, do not necessarily, as was concluded from Flügge's experiments, fall immediately to the ground within a short distance from their source. This theory is based on an assumption of constant size, which ignores the important factor of evaporation. As droplets become smaller, the surface exposed to air resistance becomes relatively greater when compared to the weight or gravitational pull toward the earth, and droplets therefore, in accordance with Stokes's law, fall more and more slowly as the size becomes smaller and smaller. The rate of evaporation, which also depends on the surface area, becomes relatively more rapid as the droplet volume becomes smaller, and some size must exist smaller than which a droplet could not fall the height of a man without complete evaporation. This droplet size has been estimated as approximately 0.1 mm. The residues of droplets of this size, derived from physiologic solution of sodium chloride or from body fluids are, after evaporation, so small that their behavior in air is more comparable to a particle of smoke than to the droplets described by Flügge. They may be considered to float or drift with the slightest air currents and therefore to be in effect a part of the atmosphere itself.

This fact may be simply demonstrated by atomizing liquids into a dark enclosed chamber, such as our experimental tank, through which a strong beam of light is projected. Distilled water evaporates almost immediately, leaving no evidence in the beam. If the liquid contains substances in solution, the nuclear residues leave a fog on evaporation, which is clearly revealed by the Tyndall effect. The presence of salts

suspended in air can be easily demonstrated by drawing the air through a Bunsen flame.

Liquid suspensions of micro-organisms may be atomized into the tank and their presence can be easily demonstrated quantitatively by the air centrifuge. It may readily be shown that they persist in diminishing numbers for hours or days.

Transmission of infection through the air may therefore take one of two forms, depending on the size of the infected droplet. The more obvious form, recognized by Flügge, is droplet infection proper. It applies to droplets larger than 0.1 mm. in diameter, which are rapidly removed from the air by gravity before they can dry and within a short distance from the source.

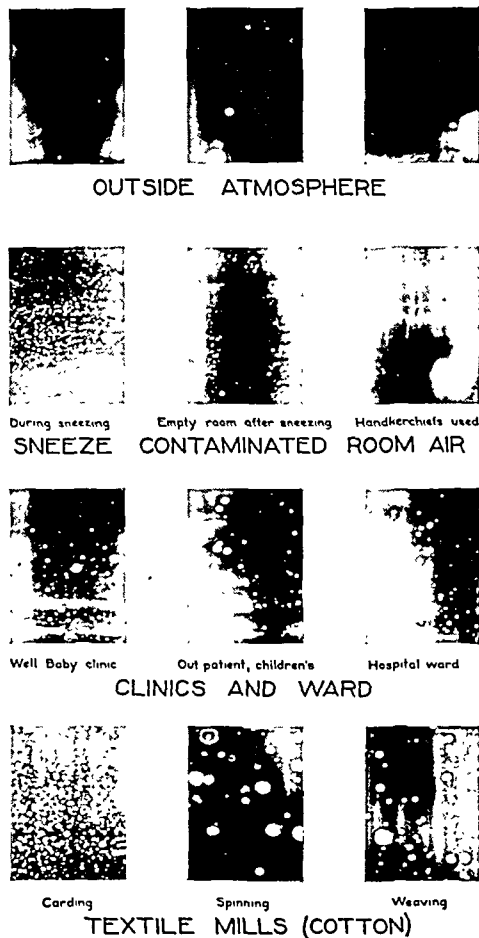


Fig. 1.—Bacteria in air.

The second form may be called air-borne infection and deals with the dried residues of infected droplets, or droplet nuclei, derived directly from droplets less than 0.1 mm. in diameter, depending primarily on air for the buoyancy that keeps them suspended for longer times and carries them longer distances. Droplet infection may change into air-borne infection when larger drops settle, evaporate and are lifted into the air as dust.

The epidemiologic characteristics of droplet infection and droplet nuclei infection are by nature opposite. Droplet infection is essentially localized and concentrated, while infection broadcast by droplet nuclei is more dispersed and dilute.

The basic fact that micro-organisms can remain suspended alive in air for periods which may permit their wide dissemination has thus been demonstrated.

6. Wells, W. F.: On Air-Borne Infection: I. Apparatus for the Study of the Bacterial Behavior of Air, *Am. J. Pub. Health* 23: 58 (Jan.) 1933.  
7. Wells, W. F.: On Air-Borne Infection: II. Droplets and Droplet Nuclei, *Am. J. Hyg.* 20: 611 (Nov.) 1934.

*Viability of Droplet Nuclei Infection.*<sup>8</sup>—The interval of time spent in the air by Flügge droplets is too brief for significant change in the viability of infection, as it is also too brief for wide dissemination. Since droplet nuclei remain in suspension for long times and may drift considerable distances, the viability of the bacteria associated with them becomes an important factor in the spread of air-borne infection. The difference between the rate at which droplet nuclei are removed from the atmosphere by settling, and the rate at which infection disappears from the air into which they are expelled, depends on the rate of survival of micro-organisms attached to these nuclei. The disappearance rates have been determined for sixteen organisms, chosen to represent several different normal habitats and other characteristics of hygienic significance in the problem of air-borne infection.

The disappearance of the Pfeiffer bacillus within an hour was in sharp contrast with the long period of several days that *B. subtilis* persisted in the air of the chamber. *Staphylococcus aureus* disappeared more rapidly than *B. subtilis*, but since it was recovered after three days it may be classed among the more resistant organisms. The water-borne organisms, on the other hand, *B. prodigiosus*, *B. pyocyaneus* and *B. violaceus*, did not survive one day, how much less a time being undetermined.

Four organisms characteristic of the respiratory tract, pneumococcus type I, *B. diphtheriae*, *Streptococcus haemolyticus* and *Streptococcus viridans*, were recovered after two days, while none of the four organisms typical of the intestinal tract, *B. coli*, *B. dysenteriae* Hiss Y, *B. typhosus* and *B. paratyphosus* A, were recovered at the end of the first day or at the end of eight hours when samples were taken after this time interval. If the Pfeiffer bacillus may be excepted as a special case, this respiratory group of organisms may be regarded as decidedly more viable in air than the intestinal group of bacteria, in spite of the rapid decrease in both groups.

Bacteriophage active against the Hiss Y dysentery bacillus was recovered from air at the end of twenty-four hours and cultivations from the plaques demonstrated the identity of the bacteriophage. The rate of disappearance during the first three hours also resembles the behavior of bacteria in air. The viability of this bacteriophage was therefore greater than for the intestinal group and less than for the respiratory group of organisms.

The recovery of virus experimentally suspended in air was made possible through the collaboration of Dr. H. W. Brown, who had previously become proficient in the identification of the virus of influenza. The lungs of a ferret infected with the Puerto Rico 8 strain<sup>9</sup> of influenza virus being used as the source of infection, filtered liquid suspensions of virus were atomized into the tank, recovered in liquids by the air centrifuge, and inoculated intranasally into ferrets.<sup>10</sup> All the ferrets inoculated with the material collected from the air within an hour after suspension contracted influenza. None of the ferrets inoculated with samples collected from the tank an hour or more after suspension of the virus contracted the disease. On the basis of this exploratory study, in which the technic was evolved as

it progressed, it is not believed that the viability end point of influenza virus has necessarily been reached.<sup>11</sup>

The time and distance which infection from droplet nuclei may travel depends more on the viability of the organisms in air than on the settling rate. The differences in viability of the various micro-organisms when suspended in air seem to be significant.

*Dust and Droplet Nuclei.*—The slow rate of settling of nuclei produced by evaporating droplets distinguishes them from particles of bacteria-laden dust. It should be obvious that the number of particles that settle on a given area in a given time depends not only on the number of particles in the air but also on the rate at which they settle. Since the coarser particles settle more rapidly, more larger particles would settle on a given area in a given time than smaller particles assuming equal concentrations in the air, as determined by the centrifuge. The ratio between the plate count and the number in a given volume as determined by the centrifuge may thus be used to indicate the rate of settling and the equivalent size of suspended particles.

It has been found by tests on artificial humidification with bacteria-laden water that the nuclei of the evaporating droplets settle with extreme slowness as compared with the settling rate of ordinary atmospheric dust. A hundred times as many dust particles as nuclei settle on a plate for the same atmospheric concentration. Twelve out of fifteen eosin methylene blue plates remained sterile when exposed for fifteen minutes to air containing 250 *B. coli* in each standard sample of 10 cubic feet, as determined by the centrifuge. This shows the impracticability of Flügge's technic for determining the presence of micro-organisms in nuclei resulting from mouth spray. His tests showed that they remain suspended in the air rather than that they settle out in a short distance. With the centrifuge, however, they may be readily demonstrated.

These conclusions were corroborated under practical working conditions in a study of the bacterial contamination of the air of textile mills in Massachusetts.<sup>12</sup> Much dust is lifted into the air of the breaking and carding rooms in cotton mills. Comparatively small amounts of dust are found in weaving rooms, but enormous quantities of water are required to humidify the air. The ratios of plate to tube counts in the dusty rooms was four times greater than the ratio in weaving rooms, which were heavily humidified, showing the high preponderance of dust in the former and of nuclei in the latter.

Little doubt can remain as to the adaptability of nuclei to be conveyed by air when it is found that they drift with so much greater readiness than the dust with which all are familiar.

*Dispersion of Droplet Nuclei Through Buildings.*—Wide distribution of "nuclei" in a building was demonstrated by inoculating with a culture of *B. coli* the humidifying water of a one-room air conditioner in the basement of the Harvard School of Public Health. This building does not have mechanical ventilation and it conforms in general design to the building of the National Institute of Health described by McCoy<sup>13</sup> in which psittacosis virus appeared to have been conveyed

11. Wells, W. F., and Brown, H. W.: Recovery of Influenza Virus Suspended in Air, *Science* 84: 68 (July 17) 1936; *Am. J. Hyg.* 24: 407 (Sept.) 1936.

8. Wells, W. F., and Stone, W. R.: On Air-Borne Infection: III. Viability of Droplet Nuclei Infection, *Am. J. Hyg.* 20: 619 (Nov.) 1934.

9. Francis, Thomas, Jr.: Transmission of Influenza by a Filtrable Virus, *Science* 80: 457 (Nov. 16) 1934.

10. Brown, H. W.: The Occurrence of Neutralizing Antibodies for Human Influenza Virus in the Sera of Persons with Various Histories of Influenza, *Am. J. Hyg.* 24: 361 (Sept.) 1936.

12. Wells, W. F., and Riley, E. C.: An Investigation of the Bacterial Contamination of the Air of Textile Mills with Special Reference to the Influence of Artificial Humidification. Report in preparation. (An abstract of this report may be found in the annual report of the Massachusetts State Department of Health for 1934, Public Document 34.)

13. McCoy, G. W.: Psittacosis Among the Personnel of the Hygienic Laboratory, *J. Infect. Dis.* 55: 156 (Sept.-Oct.) 1934.

by air from the basement to upper floors. Numbers of *B. coli* were recovered from the ends of every corridor up to the top floor of the three-story building, where the concentration reached approximately 1 per cent of that in the air-conditioned room.

Infected nuclei can therefore be dispersed by ventilating currents throughout a building, as was shown by the dispersion of nuclei from humidification with contaminated water.

*Expulsion of Droplet Nuclei by Sneezing.*—These air-floating nuclei are peculiarly adapted to bear infected matter, and the physiologic processes of respiration provide an obvious mechanism for implantation on the nasopharyngeal tissue of a person breathing the air. There remains in the chain of evidence of air-borne infection the demonstration that droplets sufficiently small to evaporate completely are actually expelled into the air by expiratory processes and that such droplets may, during pathologic reactions, be infected.

The experimental demonstration that large numbers of nuclei, infected by organisms typical of the nasopharynx, are expelled in sneezing, forged the last link in this chain of evidence. By the simple procedure of broadcasting small amounts of "sneeze powder" into a room, a practical joke was turned into a conclusive experiment. Fifty sneezes were induced from a group of subjects in a standard air-conditioned room. Bacterial samples collected in the air centrifuge on blood agar tubes revealed thousands of alpha streptococci and *M. catarrhalis*. Even after the subjects had left the room, the air contained many hundreds per sample. The application of handkerchiefs to smother the sneeze showed marked results in preventing expulsion of micro-organisms into the atmosphere. These results are illustrated in figure 1.

A convincing experiment was conducted under natural conditions in a demonstration of the air centrifuge to a class of twenty-five graduate students in a room of about 10,000 cubic feet capacity. The air centrifuge was placed at the speaker's table at least 10 feet away from the nearest person and the exhaust pointed not toward the class but laterally. The air centrifuge inspires continuously at about the same rate as a person during the maximum phase of inspiration and may therefore be considered a mechanical subject. A small amount of "sneeze powder" was dusted into the exhaust stream of the air centrifuge, being thereby projected into the room more as in normal expiration than in the more violent act of sneezing. That the expired air carried the particles to the class after a lapse of several minutes was indicated by occasional sneezes during the next ten minutes. Sneezing had ceased before the second ten-minute tube was taken, following which the class was dismissed and a third sample taken. The first tube, taken during the interval of sneezing, showed, on incubation, many alpha streptococci. The second tube, taken after the sneezing had ceased, however, showed a very large increase, thus indicating that the organisms had become dispersed throughout the room and were returning to the machine. The third tube showed a marked decrease but still gave positive evidence of contamination. In this experiment, contamination of the air by the machine was evidenced by the sneezing, and contamination of the room by the sneezers was evidenced by bacterial colonies in the tubes. A perfect cycle was thus completed and little doubt can possibly be entertained that most of the persons in the room were infected by the machine and by one another.

Whenever a person sneezes, many thousand nasopharyngeal organisms remain suspended in the air, and in commonly occupied, enclosed spaces, the exchange of nasopharyngeal flora is inevitable.

*Recovery of Nasopharyngeal Organisms in Normal Occupied Atmospheres.*—It is not necessary to employ experimental expedients to demonstrate the exchange of nasopharyngeal flora in occupied spaces. A little skill in the recognition of alpha streptococci on blood agar tubes makes their normal recovery during the winter a simple routine performance.<sup>14</sup> Samples of air taken from well baby clinics, children's medical clinics, hospital wards, theaters, factories, school rooms and outdoor air confirms the deduction that the numbers of alpha streptococci correspond to the degree of contamination by the occupants, as shown in table 1. It would seem obvious that under conditions of crowding in enclosed rooms we are breathing one another's nasopharyngeal flora as we once drank each other's intestinal flora in our water supplies, and the consequences of such practices become a study in sanitary science.

We wish to resuggest<sup>15</sup> the alpha streptococcus, an organism normally present in the nasopharynx, for similar service in indicating the degree of nasopharyngeal contamination of air, to that of *B. coli* in drinking water as indicating the degree of intestinal contamination, since the implied potentialities are analogous. An extensive study of the great diversity of inhabited atmospheres of New York City has been conducted during the past winter, and the results of 2,000 samples bear out this conclusion.

The sanitary analysis of air of normally occupied rooms establishes the nasopharyngeal contamination of our breathing air, as the presence of *B. coli* establishes the presence of intestinal contamination in drinking water.

#### AIR-BORNE INFECTION AND AIR-BORNE DISEASE

*Universality of Nasopharyngeal Infection.*—These bacteriologic experiments would seem to demonstrate a mechanism of air-borne infection that provides for the exchange of nasopharyngeal flora. The burden of proof of air-borne infection, which had hitherto rested on bacteriology, has been lifted, and there now rests on epidemiology the burden of disproof of air-borne disease. Except in the case of such manifestly widespread clinical diseases as measles and smallpox (uncomplicated by vaccination), in which intensive outbreaks seemed almost to require the possibility of air-borne transmission, such disproof did not seem difficult a quarter of a century ago.

It has seemed almost axiomatic that contamination of the air we breathe should bring about almost universal infection, although contamination of a common water supply does not necessarily do so. The quantitative factor of dilution could account for the occurrence of sporadic cases of air-borne respiratory infection, just as it accounts for sporadic cases of water-borne intestinal disease.

Nevertheless the widespread occurrence of clinical cases of measles and smallpox (in which infection is manifested by disease) almost requires the hypothesis of air-borne transmission. At the time when the indictment against air was dismissed, the extent of spread of infection was defined by the extent of the spread

14. Wells, W. F., and Riley, R.: The Alpha Streptococcus as an Indicator of Nasopharyngeal Contamination, to be read before the American Public Health Association during October.

15. Gordon, M. H.: Report on a Bacterial Test for Estimating Pollution of Air, Rep. M. Off., Local Gov. Bd. (London) 32: 421, 1903-1904.

of clinical disease, in this definition the two being synonymous. While carriers had already been recognized and been assigned an important rôle as infectors in the spread of disease by contact, their rôle as infectees in the epidemiologic determination of the extent of spread of infection was disregarded. Means for tracing subclinical infection have since revolutionized the concept of the extent of spread of infection<sup>16</sup> through the nasopharynx, though much of this evidence has not yet been assimilated into our epidemiologic thought. The mass of evidence accumulated by tests for immunity and sensitiveness, for carriers, and for epidemiologic studies of age incidence, now indicates that many, if not most, of these infections spread as readily and as broadly as the virus of measles. Trans-

TABLE 1.—*Bacteria in Air (Blood Agar, 37 C.)*

	Number of Samples	Average Number of Colonies per 10 Cu. Ft.	
		Total	Alpha (hem.)
Outside laboratory:			
Summer.....	14	23	0.0
Autumn.....	17	13	0.0
Winter.....	8	11	0.1
Spring.....	21	25	0.3
Experimental:			
Quiet.....	21	20	0.0
Sneezing.....	14	3,090	2,200
Empty after sneezing.....	4	1,440	920
With handkerchiefs.....	7	66	1.0
College classrooms and laboratories.....	18	65	1.3
Lecture hall:			
Before lecture.....	2	91	0.0
After lecture.....	2	438	3.5
Public schools:			
Modern.....	13	50	5.3
Old.....	14	261	10.8
Theater, modern air conditioned.....	22	25	0.6
Clinics, children's and infants' sick and well.....	28	728	13.3
Miscellaneous hospital wards.....	13	247	2.9
Operating room.....	1	230	3.0
Textile mills (summer conditions):			
Cotton:			
Breaking and carding.....	13	3,090	0.0
Spinning.....	10	360	0.0
Weaving.....	7	733	0.0
Woolen:			
Dusty operations.....	4	267	0.0
Intermediate.....	7	112	0.0
Humidified.....	7	363	0.0
Outside factories.....	14	46	0.0
Total samples.....	281		

lated into infections, these tests may be interpreted as evidence that few children escape the nasopharyngeal infections, and probably most adults have been infected and repeatedly reinfected.

Where the clinical cases of these diseases represent only a small fraction of the infections, conclusions based on cases must be revised before being offered in evidence. It has been argued<sup>17</sup> that in the enclosed atmospheres of contagious hospitals, with known cases of nasopharyngeal disease, the incidence of secondary cases was too low to warrant the conclusion that the air of the building, shared by all, was infective. The factors of immunity, of subclinical infections and of preclinical infectiousness have been overlooked in the interpretation of the much quoted reports on hospital cross infection. When were the cases most infective, before or after coming to the hospital? Of the exposed, how many were already immune, what was the nonimmune

population actually at risk per annum? How many were infected but reacted with an immunity response rather than the clinical disease? How much seed fell on stony ground?

The cases of "diseases of childhood," the total number of infections required to immunize a population to these diseases before maturity, and the repeated attacks of those diseases in which no permanent immunity is conferred reveal a universality of infection which falsifies the premises on which was based the conclusion that the air, breathed by all, cannot be infective.

If the total number of nasopharyngeal infections required to immunize a population before maturity is compared with the number of intestinal infections that would condemn a water supply as being highly dangerous, it might be concluded on epidemiologic grounds that the atmospheres of our common habitations are even more highly infective. It may be that the air of our schools, institutions and homes, where children mix freely in the highly infectious preclinical stage of disease, where many more harbor infection subclinically, where air is less diluted than in separate wards opening into common corridors, or even in wards where bed isolation is practiced, is more heavily infected than the air of contagious hospitals.

The universality of nasopharyngeal infection does not prove that it is air borne, but it meets the objection that, if air were infective, nasopharyngeal disease would be universal.

*Velocity of Spread.*—The aptness of the theory of air-borne infection to account for disease transmission has never been questioned, and "the theory is reluctantly given up, since it is the easiest method of explaining the spread of readily communicable diseases."<sup>1</sup> Those, however, who have adopted the alternative theory of "contact" infection will point out the undeniable fact that the special conditions which have been set up for the spread of air-borne infection are likewise conducive to intimate contact. Just what is meant by the word contact as applying to the spread of infection should be defined in objective terms before the two theories can be contrasted.

If the more or less direct spread of infection from person to person, the quick transfer of fresh infective material, proximity in time and space between infected and noninfected, constitutes contact, then the condition of air-borne infection by breathing one another's air in semienlosed spaces would constitute a rather extended form of contact infection. The preceding discussion has not assumed the broadcasting of infection in the sense that wind-blown pollens causing hay fever are broadcast.

While these distinctions may reconcile those to whom the words "air-borne infection" might revive the ancient and exploded theory of miasms, failure to extend the concept of "contact" may lead to the breakdown of measures for the prevention of this type of infection. It is necessary therefore to distinguish the different phases of "contact," and it would seem that this might become possible by a statistical examination of the velocity of spread by the different phases.

If contact infection requires that an uninfected person touch an infected person in some particular manner, or touch something in a particular manner which the infected person has touched in a particular manner, or that the two be within the short radius of Flügge droplets during the brief interval of fall, the rate of spread would be limited by these circumstances. If the

16. Stallybrass, C. D.: *The Principles of Epidemiology*, New York, Macmillan Company, 1931.

17. Chapin, C. V.: *The Air as a Vehicle of Infection*, J. A. M. A. 62: 423 (Feb. 7) 1914.

chance of infecting each individual is not large, the chance of simultaneous infection of many would be exceedingly small, and disease would limp in its spread. (Contact outbreaks of typhoid die out not from exhaustion of inflammable material but from difficulty of transferring the spark.) If, on the contrary, the sneeze-infected air of a room were breathed by many persons over a considerable interval of time, simultaneous infection could be realized, and the velocity of infection would be ample to explain even the explosive pandemic of influenza in 1918-1919. If refinements in statistical methods can determine the velocity of subclinical infection, it may be possible to distinguish between these two modes of transmission.

Recognizing, of course, that all forms of contact work cooperatively in spreading infection, there is good reason to believe that only that phase which is called air-borne infection can be swift enough to explain the epidemic spread of nasopharyngeal disease in non-immune populations.

*Diseases as Biologic Entities.*—If infectious disease may be regarded as a biologic entity requiring the continuous propagation of parasites through a chain of hosts,<sup>18</sup> it would follow that a mode of transmission on which the continuity of the disease depended must postulate a means for the parasite to leave its discarded host, exist, and be transported to a new host into which it must gain entrance. The characteristics of diseases conveyed through the nasopharynx would seem to satisfy such postulates, as their pathology provides for a means of infecting air, the etiology seems to indicate causative agents capable of existing in air, and physiology provides for the planting of the parasite on the respiratory passages of a new host. Their universality even at early ages indicates widespread infection clinically or subclinically, and the velocity of spread seems to be characteristically explosive.

If one compares diseases as a group whose portal of entry and exit is the nasopharynx with those whose entrance is through other portals, one finds marked group contrasts. The nasopharyngeal group may in these respects be contrasted with typical gastro-intestinal diseases: where frequent uncontrolled liquid discharges are conducive to the contamination of food, milk and water; where the organisms can readily survive, if not multiply, in these mediums and appear unadapted to life in air; where the epidemiology makes it possible to incriminate such sources even though the organism cannot be found, and where control measures have dramatically demonstrated the soundness of the hypothesis.

They may be contrasted with the insect-borne diseases where discharge of the organism is not pathologically provided; where the organism cannot survive the rigors of environmental transfer, but the existence of which in the peripheral circulation adapts them to withdrawal through the proboscis of an insect, within whose body they are adapted to survive or even of necessity bound to sojourn; where the occurrence of the disease is perfectly circumscribed by the prevalence of the insect, and where control of insects inevitably stamps out the disease.

They may be contrasted with typical contact diseases such as the venereal diseases, where external lesions are habitually brought into physical contact with susceptible tissue; where life of the pathogen outside the body is almost impossible; where any other explanation of

transmission is regarded with skepticism, if not derision, by the specialist, and where prevention is limited by the power to control the contacts.

The argument that once all communicable diseases were attributed to air and that, the more perfect becomes our knowledge, the less air becomes implicated cannot in view of these differences be carried *ad absurdum*.

The more intimate our knowledge of the modes of transmission becomes, the more evident does it become that diseases are adapted to transmission by diverse routes, and among these air transmission of nasopharyngeal infection may not be the least important.

*Nasopharyngeal Infection Still Uncontrolled.*—Where the transmission of disease has been prevented by control measures, there can be little doubt as to the correctness of the theory of transmission. It may therefore be significant that those diseases which have so far defied control are those in which the causative agent enters and leaves through the nasopharynx. In an evaluation of the importance of diseases made by the United States Public Health Service,<sup>19</sup> the only infectious diseases considered as of a first order of magnitude were influenza and pneumonia, and tuberculosis.

The Public Health Service figures show, in particular, that:

1. More than 85 per cent of the deaths from infectious and parasitic diseases occurring in the United States in 1933 were from diseases in which the usual portal of entry of the causative micro-organism is the nasopharynx.
2. Of the important reportable diseases in 1933, the incidence of measles was highest, that of influenza second.
3. Of the incidence of illness, based on nation-wide periodic surveys in 1928-1931, colds and bronchitis, influenza and pneumonia, and tonsillitis occupy the first three places in annual incidence, causing considerably more than half of the total cases.
4. Among industrial workers during 1933, the largest single cause of illness of eight days' duration was influenza and pneumonia.
5. Nation-wide periodic surveys in 1928-1931 show that influenza and pneumonia caused more days in bed than any other disease. Colds and bronchitis rank second, tuberculosis third. The diseases spread through the nasopharynx caused a total of 218 days in bed for every 100 persons, as against 167 days in bed from all other causes combined.

The predominance among infectious diseases of those transmitted through the nasopharynx challenges public health measures of control. Until the purity of our common air supplies can be established through sanitary control, the transmission of these diseases by air cannot be disproved.

(To be continued)

19. Britten, R. H.: Important Causes of Sickness and Death, Pub. Health Rep. 51: 947 (July 17) 1936.

18. Smith, Theobald: Parasitism and Disease, Princeton, N. J., Princeton University Press, 1934.

**Acetylcholine.**—The results of the experiments of Dale and Gaddum lacked only the direct proof of the substance produced by nerve stimulation. This proof has been given lately by Kibjakow for the antidromic fibers and by Feldberg for the antidromic and the chorda fibers. Both investigators independently found that by stimulation of the respective nerves a substance passes into the circulating fluid which shows a vasodilator effect as well as other properties of acetylcholine.—Loewi, Otto: The Humoral Transmission of Nervous Impulse. The Harvey Lectures, Baltimore, Williams & Wilkins Company, 1934.

SCOPOLAMINE-MORPHINE SEMINARCOSIS  
WITH MODIFICATIONS

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In 1915 a symposium on so-called twilight sleep was held before the St. Louis Medical Society. Tilles<sup>1</sup> reported his experience in eleven private cases in which he used scopolamine-narcotine. Gellhorn and Kerwin<sup>2</sup> reported fifteen City Hospital and three private cases, having employed Siegel's modification of Gauss's method. Schwarz<sup>3</sup> presented fifteen cases together with an experimental and clinical study of scopolamine-narcotine seminarcosis.

Early in 1919 Dr. Henry Schwarz<sup>4</sup> presented the first thousand cases of delivery in Barnes Hospital. Since this time various other publications from the St. Louis clinics have come out as more cases have been observed. In 1929 there were 4,212 cases reported from Barnes and St. Louis Maternity hospitals, making

TABLE 1.—Distribution of Cases and Fetal Mortality

Class	Semi-narcosis	Number of Cases	Still-born	Macerated	Died in Hospital	Total Mortality	Per Cent
White							
Primiparas	With	1,910	23	5	17	45	2.3
Multiparas	With	1,336	14	1	13	28	2.09
Negro							
Primiparas	With	339	10	1	3	14	4.1
Multiparas	With	129	4	2	3	9	6.9
Total.....	With	3,720	51	9	36	96	2.6
White							
Primiparas	Without	669	15	7	10	32	4.7
Multiparas	Without	2,064	21	17	26	64	3.1
Negro							
Primiparas	Without	271	9	3	8	20	7.3
Multiparas	Without	442	11	13	4	28	6.3
Total.....	Without	3,446	56	40	48	144	4.1
Grand total...	All types	7,166	107	49	84	240	3.3

a total number of 8,166 deliveries that were analyzed up to Feb. 15, 1929, scopolamine-morphine having been used in 4,113 of the deliveries. Only 7,166 of the foregoing are included in table 1, which shows the distribution of the cases and the fetal mortality.

In 1915, when Gauss's method was being investigated, animal experimentation was carried on in the pharmacologic laboratories of the Washington University School of Medicine to determine the effects of the various opium alkaloids and scopolamine on heart and respiration before the drugs were employed in a routine clinical way.

These experiments showed that scopolamine in doses much larger than were ever recommended for twilight sleep has no material effect on blood pressure or respiration. Also that the interference of the opium alkaloids (morphine, narcotine, and morphine-narcotine

meconate) with the respiration in the new-born child is twofold; first the respiratory center is depressed, and in the second place there is bronchoconstriction.

We have been using scopolamine hydrobromide in ampule form with morphine sulfate in one-sixth grain (0.01 Gm.) doses for the induction of twilight sleep. Various other preparations in tablet form have been tried out but this is most convenient and uniformly active pharmacologically.

We use scopolamine-morphine seminarcosis as a first stage measure and begin it when the patient is in active labor, usually determined by an obliterating cervical canal. In the hands of the less experienced it may best be started when the uterine contractions are strong and occur at regular intervals and usually when there is at least two fingers' dilatation in the primiparous patient. In the multiparas, the procedure is usually begun with the first regular contractions that are painful.

The method as first employed has stood the test and has not been found wanting in more than twenty years of its use. The patient undergoes the usual preparation for delivery before the seminarcosis is begun. The dosage of the various drugs has remained the same with but minor changes in the hands of various individuals. The initial injection contains morphine one-sixth grain (dilaudid hydrochloride at times), and scopolamine hydrobromide  $\frac{1}{133}$  grain (0.5 mg.), the former never being repeated. The interval of injections has gone unchanged, forty-five minutes elapsing between the first and second and the second and third injections, and from that point on the dosage is determined by the patient's loss of coordination and depth of seminarcosis.

When the seminarcosis is intensified to general anesthesia by a general anesthetic at the time of delivery, great care must be exercised to prevent the giving of too much anesthetic. Chloroform administered properly in the normal patient is almost ideal. From ten to fifteen drops of chloroform on a thin gauze mask is usually sufficient to render the patient completely relaxed. There is an inclination toward giving too much chloroform, and by so doing the mother is not only chloroformed to a much deeper degree than the occasion demands but the fetus is also chloroformed so deeply that it is bound to be born apneic, to become asphyxiated and to require resuscitation. Ether, nitrous oxide and ethylene are also used at the time of delivery as the case demands.

Morphine seminarcosis is most applicable during the first stage of labor, particularly in the primiparous patient or in the multiparous patient in whom previous repair work has been done on the cervix, or in whom the first stage is protracted and painful because of premature rupture of the membranes or a long rigid cervix. In cases of delivery through the natural passages in women who on a previous occasion have been delivered by abdominal cesarean section, it is of the greatest importance to prevent all straining on the part of the parturient woman and to extract the child as soon as dilatation is completed, so as to keep all strain as far as possible from the uterine scar. In cases of pulmonary tuberculosis and in cardiac disease, seminarcosis is also successfully used.

We may say here that after the method was employed in the first 150 to 200 cases it was felt that it was a procedure without appreciable danger to mother or child and that it had no marked effect on the prolongation

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1. Tilles, R. S.: J. Missouri M. A. 12: 530-533, 1915.

2. Gellhorn, G., and Kerwin, W.: J. Missouri M. A. 12: 533-541, 1915.

3. Schwarz, O. H.: J. Missouri M. A. 12: 541-543, 1915.

4. Schwarz, Henry: Am. J. Obst. & Gynec. 79: 46, 1919.

of labor. In previous papers we<sup>5</sup> have demonstrated the fact that it had a definite tendency to shorten the first stage and slightly lengthen the second stage. In order to meet the criticism that under scopolamine-morphine semimarcosis more forceps deliveries are necessary, we observed a series of thirty-four consecutive primiparas. During this period there were two or three patients delivered instrumentally for definite indications on the part of the mother or child, but such cases will be found in any series regardless of the anesthesia or analgesia employed. We do not feel that there is any particular end to be gained in permitting

with a moderately contracted pelvis. We did not at any time expect to show any brilliant statistical figures to point out the advantages of the method but felt that it was particularly indicated under such special circumstances.

In our previous papers we have stated that there are no disadvantages of the method to either mother or child, although the mother in some instances is somewhat restless during the pain and occasionally somewhat excitable. However, we know of no method which by such a simple procedure as two or three hypodermic injections can result in such complete amnesia over such

TABLE 2.—Composite of the First Two Thousand, the Second Two Thousand and the Total of the Two Series

Service	Primiparas			Multiparas			Totals			Stillborn			Macerated			Died			Total			Percentage			Corrected Percentage (Macerated Excluded)		
	1st 2,000			1st 2,000			1st 2,000			1st 2,000			1st 2,000			1st 2,000			1st 2,000			1st 2,000			1st 2,000		
	2d 2,000	Total	2d 2,000	Total	2d 2,000	Total	2d 2,000	Total	2d 2,000	2d 2,000	Total	2d 2,000	Total	2d 2,000	Total	2d 2,000	Total	2d 2,000	2d 2,000	Total	2d 2,000	Total	2d 2,000	Total	2d 2,000	Total	2d 2,000
Without																											
Ward.....	209	278	487	407	209	616	616	487	1,103	13	7	20	5	7	12	4	6	10	22	20	42	3.6	4.1	3.8	2.8	2.7	2.7
Private.....	78	30	108	221	36	257	307	86	393	4	2	6	3	1	4	1	1	2	5	4	12	2.6	4.7	3.1	1.6	3.5	2.0
Total.....	287	308	595	628	265	901	923	673	1,496	18	9	26	8	8	16	5	7	12	27	24	54	3.3	4.2	3.6	2.4	2.8	2.5
Morphine, scopolamine																											
Ward.....	283	382	665	86	70	156	369	432	821	5	4	9	2	1	3	7	1	8	14	6	20	3.8	1.3	2.4	3.3	1.1	2.1
Private.....	315	329	644	263	99	362	578	428	1,006	5	1	6	2	1	3	5	5	10	12	7	19	2.1	1.6	1.9	1.7	1.4	1.6
Total.....	598	711	1,309	349	169	518	947	860	1,827	10	5	15	4	2	6	12	6	18	26	13	39	2.7	1.5	2.1	2.3	1.3	1.8
Dilaudid, scopolamine																											
Ward.....	0	149	149	4	20	24	4	179	183	0	1	1	0	0	0	0	1	1	0	2	2	0	1.1	1.1	0	1.1	1.1
Private.....	0	28	28	0	8	8	0	46	46	0	0	0	0	0	0	0	1	1	0	1	1	0	2.2	2.2	0	2.2	2.2
Total.....	0	187	187	4	28	32	4	225	229	0	1	1	0	0	0	0	2	2	0	3	3	0	1.3	1.3	0	1.3	1.3
Sodium amylal, scopolamine																											
Ward.....	0	45	45	4	19	23	4	64	68	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Private.....	0	58	58	13	30	43	13	88	101	0	0	0	0	2	2	0	0	0	2	2	0	2.3	2.0	0	0	0	0
Total.....	0	103	103	17	49	66	17	152	169	0	0	0	0	2	2	0	0	0	2	2	0	1.3	1.2	0	0	0	0
Pentobarbital sodium, scopolamine																											
Ward.....	0	120	120	2	17	19	2	137	139	0	1	1	0	0	0	0	0	0	0	1	1	0	0.7	0.7	0	0.7	0.7
Private.....	0	12	12	0	4	4	0	16	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total.....	0	132	132	2	21	23	2	153	155	0	1	1	0	0	0	0	0	0	1	1	1	0	0.7	0.7	0	0.7	0.7
Allylisopropyl																											
Ward.....	8	1	9	44	5	49	52	6	58	No deaths																	
Private.....	No cases																										
Allylisopropyl with scopolamine																											
Ward.....	2	0	2	2	0	2	5	0	5	No deaths																	
Private.....	No cases																										
Sodium glurate, scopolamine																											
Ward.....	No cases																										
Private.....	0	7	7	0	4	4	0	11	11	No deaths																	
Quinetherol <sup>a</sup>																											
Ward.....	31	0	31	14	0	14	45	0	45	No deaths																	
Private.....	2	0	2	3	0	3	5	0	5	No deaths																	
Total.....	33	0	33	17	0	17	50	0	50																		
Grand total																											
Ward.....	593	975	1,568	564	550	914	1,097	1,235	2,422	18	13	31	7	8	15	11	8	19	36	29	65	3.3	2.2	2.7	2.6	1.6	2.1
Private.....	295	474	869	508	201	709	903	675	1,578	9	3	12	5	4	9	6	7	13	20	14	34	2.2	2.1	2.2	1.7	1.5	1.6
Total.....	928	1,449	2,377	1,072	551	1,623	2,000	2,000	4,000	27	16	43	12	12	24	17	15	35	56	43	99	2.8	2.2	2.5	2.2	1.6	1.9

<sup>a</sup> Quinetherol contains ether 75 cc., quinine alkaloid 1.3 Gm., alcohol 12 cc., and liquid petrolatum to make 120 cc.

spontaneous delivery; we employ perineal forceps and episiotomy incisions in the primiparas almost as a routine. After we had derived a considerable experience from these cases we felt that it had its greatest usefulness in cases in which labor was likely to be prolonged, particularly in elderly primiparas and in patients

a considerable period that it enables at least 80 to 85 per cent of these patients to go through labor without its recollection. Fetal asphyxia is not increased, although children are occasionally born in a state of oligopnea, from which usually they promptly recover on appropriate stimulation.

The disadvantages are chiefly from the standpoint of the attendants. Some one must be constantly with the patient, particularly the one who is supervising the injections. It may be said that much of our success with the method has been due to the untiring efforts of our house officers during this period of twenty years. They have seen to it that the patients whom they have handled have suffered no unnecessary pain during their labor by the careful supervision of this method. The other disadvantage is the not infrequent restlessness and occasional excitability of the patient. That is,

5. Krebs, O. S., and Wilson, L. R.: Scopolamine-Morphine Semimarcosis in the Second Thousand Deliveries in Barnes Hospital, *J. Missouri M. A.* 20:12 (Jan.) 1923; abstr. Proceedings of the Washington University Medical Society, *J. Missouri M. A.* 19:240, 1922. Krebs, O. S., and Schwarz, O. H.: Scopolamine-Morphine Semimarcosis, with a Report of Its Use in the Third Thousand Deliveries in Barnes Hospital, *J. A. M. A.* 81:1083 (Sept. 29) 1923; Scopolamine-Morphine Semimarcosis, with Report of Fourth Thousand Deliveries in Barnes Hospital, *Am. J. Surg.* 39:98-103 (Oct.) 1925. Krebs, O. S.: Scopolamine-Morphine Semimarcosis: Its Use in the First Thousand Deliveries in the St. Louis Maternity Hospital, read before the St. Louis Medical Society, April 30, 1929. Krebs, O. S.: Scopolamine-Morphine Semimarcosis, *J. Missouri M. A.* 26:485 (Oct.) 1929 (read in the symposium on obstetrics at the 72d Annual Meeting of the Missouri State Medical Association, Springfield, May 13-16, 1929).

however, by no means striking. It has no effect on the patient herself but at times is quite taxing to the attendant.

In the last few years, with the increasing popularity of the barbituric acid derivatives, various of these preparations have been used with scopolamine hydrobromide and morphine usually preceding the latter drugs in administration. In many instances the results were so gratifying for several reasons that the use has been extended. In the first place there seems to be less excitability evidenced in the patient, which has been one of the sources of dissatisfaction that we have found occasionally when employing our original technic. Scopolamine hydrobromide has been administered in the primiparas when active labor has begun and when there has been about two fingers' dilatation. We find that we now can keep the patient quite comfortable during the prodromal stages prior to the time we ordinarily start the seminarcosis and that the latter takes hold more quickly in spite of active labor. The latter fact has led us frequently to reduce the amount of morphine or other opiate in our first injection of so-called twilight sleep or even to discontinue its use entirely and has also improved the amnesia in multiparas advanced in labor on entering the hospital. The omission of the opium alkaloids, which drugs Jackson in 1915 held as likely to interfere with the prompt establishment of respiration in the new-born child, has had a definite result in the lessened number of apneic babies born. A separate

bromide and other drugs. Scopolamine hydrobromide was used in 1,427 deliveries. Although scopolamine hydrobromide was used in 350 more cases in the second series, it was used with opiates 154 more times, which shows not a decreasing use of scopolamine-morphine for other drug combinations but rather an extension of the use of scopolamine hydrobromide with other drugs, owing to its wider applicability. This additional use of scopolamine hydrobromide was in the primiparas, generally speaking. There was a total of 1,072 and 551 multiparas in the first and second groups, respectively, and the incidence of scopolamine hydrobromide was 436 (41 per cent) and 286 (51 per cent), respectively. At the same time, the frequency of primiparas was 928 and 1,449 in the first and second groups, respectively, with the employment of scopolamine hydrobromide in 641 (69 per cent) and 1,141 (79 per cent), respectively.

The corrected mortality figures in the first 2,000 cases in infants weighing 2,500 Gm. or over at birth and excluding macerated fetuses was 2.3 per cent with scopolamine-morphine and 2.4 per cent without scopolamine-morphine, and there was no mortality in 126 cases in which scopolamine hydrobromide was used in combination with other drugs, not including opiates.

In the second group of 2,000 deliveries the corrected mortality with scopolamine-morphine was 1.3 per cent, without scopolamine-morphine 2.8 per cent, and 0.3 per cent in which scopolamine hydrobromide was used with other drugs, not including opiates.

TABLE 3.—Distribution of Patients and Fetal Mortality in Collective Groups in Which Scopolamine Hydrobromide Was Used with Opiates and with Barbiturates

	Service	Primiparas	Multiparas	Total	Stillborn	Macerated	Dead	Total	Percentage	Corrected Percentage
Without scopolamine (37.5%)	Ward	487	616	1,103	20	12	10	42	3.8	2.7
	Private	108	285	393	6	4	2	12	3.1	2.0
	Total	595	901	1,496	26	16	12	54	3.6	2.5
Scopolamine with all other drugs (62.5%)	Ward	1,021	298	1,319	11	3	9	23	1.7	1.7
	Private	761	424	1,185	6	5	11	22	1.9	1.4
	Total	1,782	722	2,504	17	8	20	45	1.8	1.5
Opiates with scopolamine	Ward	814	190	1,004	10	3	9	22	2.2	1.9
	Private	682	370	1,052	6	3	11	20	1.9	1.6
	Total	1,496	560	2,056	16	6	20	42	2.0	1.8
Barbiturates with scopolamine	Ward	176	94	270	1	0	0	1	0.4	0.4
	Private	77	51	128	0	2	0	2	1.6	0.0
	Total	253	145	398	1	2	0	3	0.8	0.5
Quinetherol	Ward	31	14	45	0	0	0	0	0.0	0.0
	Private	2	3	5	0	0	0	0	0.0	0.0
	Total	33	17	50	0	0	0	0	0.0	0.0

report on this feature in a series of 1,000 cases is being prepared by Dr. Wulff for publication at this time.

To show the increasing incidence of the use of these barbiturates, we have analyzed the first 2,000 cases since our last report in 1929 and also the most recent 2,000 deliveries up to Jan. 1, 1936. There remain approximately 6,000 deliveries between these two groups that have not been studied.

In this first series of 2,000 cases there were 951 deliveries in which scopolamine hydrobromide and opiates were employed, 923 instances in which scopolamine hydrobromide was not used, and 126 cases in which there was a combination of scopolamine hydrobromide and other drugs. Scopolamine hydrobromide was used either with or without opiates 1,027 times.

In the second group of 2,000 cases there were 1,105 deliveries in which scopolamine hydrobromide and opiates were employed, 573 instances in which scopolamine hydrobromide was not used and 322 cases in which there was a combination of scopolamine hydro-

In the combined series of 4,000 cases, the corrected mortality without scopolamine hydrobromide was 2.5 per cent, with scopolamine hydrobromide and opiates 1.8 per cent, scopolamine hydrobromide with all drugs 1.5 per cent and scopolamine hydrobromide with barbiturates 0.3 per cent.

Table 3 shows the distribution of the patients and the fetal mortality in collective groups in which scopolamine hydrobromide was used with opiates and with the barbiturates.

#### CONCLUSIONS

1. The methods for the conduct of labor as we use them can be carried out only by trained obstetricians in a maternity of moderate size. The same general conduct of seminarcosis in labor has been employed for twenty years with satisfactory results.

2. Scopolamine-morphine seminarcosis has found increased employment in the last cases reported, together with an increasing application of scopolamine hydrobromide with barbiturates.

3. From analysis of the records, we feel definitely that scopolamine-morphine seminarcois is in no way increasing fetal mortality.

4. With the addition of barbituric acid derivatives to our original method of seminarcois, the use has been extended.

5. It seems that an almost ideal method is possible in our hands in the use of barbiturates with scopolamine hydrobromide alone or with a reduced dosage of opiate.

6. The method should not be used to the exclusion of other methods of analgesia and anesthesia but should be used in combination with them.

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## PENTOBARBITAL-SODIUM AND SCOPOLAMINE HYDROBROMIDE

THREE YEARS' EXPERIENCE WITH THESE DRUGS  
IN OBSTETRICS AT THE EVANSTON HOSPITAL

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We began using pentobarbital-sodium and scopolamine hydrobromide for the relief of pain in labor at the Evanston Hospital in December 1932. Dr. Frederick C. Irving at the Boston Lying-in Hospital had been using these drugs for some time and with such satisfactory results that we were convinced of their superiority. One of us visited Dr. Irving in December 1932 and received from him and his colleagues all the information then available on the procedure of administering the drugs.

In February, 1935 one of us, with Dr. Philip H. Smith,<sup>1</sup> published a report based on the study of 500 deliveries in which pentobarbital-sodium and scopolamine hydrobromide had been used. At that time we came to the conclusion that our results with this method of pain relief in labor had been sufficiently satisfactory to warrant its further use.

We have now used these drugs almost exclusively for three and one-half years in cases in which we wished to furnish relief of pain otherwise than with gas. We present here a report on the fetal mortality, the maternal mortality and morbidity, and the reaction of the patients based on letters received from a questionnaire. The records of the past three years during which pentobarbital-sodium and scopolamine hydrobromide were being used will be compared with the three years just preceding.

During the three year period that ended Nov. 1, 1935, we delivered 2,275 mothers and the drugs were administered in 1,415 cases, or 62 per cent. One can readily see that these drugs are not used as a routine. We have, however, used almost no other drugs for the relief of pain. If a patient reaches the ward in rapid labor, gas is used both for analgesia and for anesthesia, and nitrous oxide for the former and ethylene for the latter. The other contraindications for the use of pentobarbital-sodium and scopolamine hydrobromide are (1) full stomach, (2) infection of the upper

respiratory tract, (3) prematurity and (4) heart disease. The contraindications, however, have not been strictly followed, as can be easily seen from the content of some of the case reports.

When the patient is in labor, regardless of the amount of dilatation of the cervix, she is given  $7\frac{1}{2}$  grains (0.5 Gm.) of pentobarbital-sodium in five separate capsules with a pin hole in each. The earlier it is administered the better. One must be satisfied, however, that one is dealing with true labor. The drug is not given in one capsule because we have found that it was not so effective, a fairly insoluble mass being formed at times when in contact with the hydrochloric acid of the stomach. About five minutes later the patient is given half a drachm (2 Gm.) of sodium bicarbonate in water to help alkalize the stomach. When the pentobarbital-sodium is given, scopolamine hydrobromide,  $\frac{1}{150}$  grain (0.0004 Gm.), is administered by hypodermic injection. Some patients who are smaller than average receive only 6 grains (0.4 Gm.) of pentobarbital-sodium. The initial dose, however, should be large, for one is administering an anesthetic and the patient must pass quickly through the excitement stage and then be kept there by an additional  $1\frac{1}{2}$  grain (0.1 Gm.) capsule every two to three hours. This additional amount is necessary because the drug is constantly oxidized in the body. The initial dose for large women is 9 grains (0.6 Gm.). We pay little attention to the ordinary restlessness that comes with the pain except to prevent injury. The labor bed must be extra large, with crib sides covered with padding. Nurses are instructed to handle the patient as little as possible. Every patient has a special nurse assigned as soon as the pentobarbital-sodium and scopolamine hydrobromide are given and the nurse must not leave the bedside until about five hours after delivery.

If the patient becomes restless not only with the pain but also between pains and if her restlessness seems extreme, a little more pentobarbital-sodium may be administered, but never over 3 grains (0.2 Gm.) additional. Then, if she is still restless, no other drugs are administered. Morphine and other narcotics should almost never be administered to such patients until after the third stage of labor. Such cases should be recognized early as failures from the standpoint of anesthesia; nature should be allowed to take its course, and the actions and cries of the patient should be disregarded. The uterus will eventually empty itself. Grave mistakes are sometimes made by going from one course of procedure to another in an attempt to relieve pain. A few examples are shown in the reports covering obstetric fetal mortality. Relief of pain in obstetrics is only one small part of the proper conduct of such cases. A simple effective method should be tried when indicated but abandoned when it fails.

There has recently been published a method of pain relief in labor in which five different drugs are given to the patient within a few hours, by mouth, by hypodermic and by rectum, combining narcotics, a hypnotic and a uterine stimulant. Then, during delivery, gas is used. Such polypharmacy for the relief of pain in obstetrics seems unnecessary and unreasonable.

In a few cases we have repeated the scopolamine hydrobromide after from four to six hours with very good effects. We have not used rectal instillation of ether except in a few early cases, deeming it unwise to proceed too far with too many drugs.

When the patient is ready for delivery she is given ethylene, put to sleep, prepared, draped and delivered.

<sup>1</sup> Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 14, 1936.

1. Galloway, C. E., and Smith, P. H.: Study of Nembutal (Pentobarbital-Sodium) and Scopolamine for Relief of Pain in 500 Deliveries, *Am. J. Obst. & Gynec.* 29:207-215 (Feb.) 1935.

Outlet forceps and episiotomy is the choice procedure for delivery, 20 per cent being spontaneous, with the usual small number of breech and other operations.

If after the patient reaches her bed she is restless in coming out of the gas, she may be given one-sixth grain (0.01 Gm.) of morphine hypodermically and generally with good results. During this period especially, the patient should be kept warm and fluids and nourishment should be provided. She is generally able to drink long

TABLE 1.—Operative Incidence in Relation to Maternal and Fetal Mortality

Evanston Hospital	1930	1931	1932	1933	1934	1935
Labors.....	981	843	738	686	735	854
Spontaneous.....	57.1	54.8	48.4	41.3	37.4	35.2
Operative.....	42.9	45.1	51.1	58.7	62.6	64.8
Maternal deaths.....	2	1	1	0	1	0
Maternal mortality.....	0.20	0.11	0.13	0	0.13	0
Gross fetal mortality.....	4.1	3.0	2.8	3.6	3.0	4.03

TABLE 2.—Maternal Morbidity

	1933	1934	1935	Average 3 Years
Total labors .....	686	735	854	
Cases with pentobarbital-sodium.....	301	518	596	
Pentobarbital-sodium used .....	43.8%	70.4%	69.4%	
Morbidity rate				
Without pentobarbital-sodium....	6.4%	7.3%	5.0%	6.1%
With pentobarbital-sodium .....	6.9%	5.1%	4.0%	5.68%

before complete consciousness is reached and should be persuaded to do so. A few patients become rather spastic and respirations become shallow. We have used coramin in such cases and one-sixth grain of morphine hypodermically with very good results. We now have picrotoxin to counteract the effects of barbiturate poisoning but we are not in a position to report on its use. There have been a few cases in which spasticity and shallow respirations have occurred during labor and here too we have deemed it wise to make the exception and have used a small dose of morphine with coramin, with good results.

Table 1 shows the operative incidence compared with maternal and fetal mortality. The increase in the use of outlet forceps and episiotomy has evidently not influenced either maternal or fetal mortality.

The following is a short account of the only maternal death that has occurred during the three year period covered in this study, a rate of 0.07 per cent in a series of 1,415 deliveries for which pentobarbital-sodium was given:

Mrs. L., a primipara, aged 36, was in labor thirty hours with no progress; 10½ grains (0.7 Gm.) of pentobarbital-sodium had been administered sixteen hours previously. Low cervical cesarean section was done, with severe hemorrhage four hours later. Death occurred shortly afterward.

One of the much used generalizations regarding anesthetics in obstetrics is that they will increase morbidity. Table 2 compares the morbidity rate of the group in which pentobarbital-sodium and scopolamine-hydrobromide were administered, with the rate of the group delivered without these drugs over the last three-year period. In all the following figures on morbidity the standard of the American College of Surgeons was used and includes only febrile morbidity.

Table 3 shows a comparison of the two three-year periods from the standpoint of morbidity. Then, thinking that since cesarean section furnishes such a high febrile morbidity rate we should eliminate all sections, we have shown this comparison also.

Since the group of 500 cases that were used in our preliminary study are included in these figures, we take the liberty to show table 4, which includes a more detailed description of the morbidity in that group.

Table 5 covers the fetal mortality for the past six years, and, since the obstetric mortality shows a slight increase during the period when pentobarbital-sodium and scopolamine hydrobromide were used, we separated the charts, and in table 6 is given the fetal mortality of the group in which the mothers received these drugs.

A more detailed description of the twenty-two unavoidable deaths is given in table 7 and a detailed description of the nine cases of obstetric mortality follows.

OBSTETRIC FETAL MORTALITY

CASE 1.—A baby, weighing 8 pounds 2½ ounces (3,700 Gm.), was born after a difficult labor of sixteen hours, the second stage lasting five and one-half hours. The mother received pentobarbital-sodium 6 grains (0.4 Gm.), and scopolamine hydrobromide ¼½ grain (0.0004 Gm.), at 1:45 a. m.; pentobarbital-sodium 1½ grains (0.1 Gm.) at 3 o'clock and again at 7:30, a combination of thymus extract and hypophysis extract, 3 minims (0.2 cc.) at 2:35 p. m., and at 3:40 there was a large brown emesis during the anesthetic; the mother became cyanotic and carbon dioxide oxygen was given. The baby was delivered at 3:45. Resuscitation was difficult; respirations were shallow, rapid and irregular; breathing was of the abdominal type and spastic. The clinical diagnosis was cerebral hemorrhage (severe). The baby died in thirty-six hours. The postmortem diagnosis was asphyxia neonatorum.

CASE 2.—Stillbirth resulted after a twelve hour labor. The baby was large. The pelvis was small and it was a very hard midforceps delivery, much difficulty being encountered with the shoulders. The weight was 9 pounds 12¾ ounces (4,445 Gm.).

TABLE 3.—Comparison of Two Three-Year Periods: Morbidity

	1930-1932 Before Pentobarbital- Sodium	1933-1935 After Pentobarbital- Sodium
Total labors .....	2,562	2,275
Cases of morbidity.....	185	137
Percentage of morbidity.....	7.2	6.0
Total labors less sections.....	2,445	2,178
Total morbidity cases less sections.....	139	98
Percentage of morbidity less sections..	5.6	4.4

TABLE 4.—More Detailed Description of Morbidity

Total cases reported (February 1935).....	500
Number showing fever (American College of Surgeons standard).....	29
Percentage of total.....	4
Primiparas.....	16
Multiparas.....	4
Operative delivery.....	19
Spontaneous.....	1
Cause of fever:	
Pelvic infection.....	10
Respiratory infection.....	3
Hematoma of perineum.....	2
.....	1
.....	1
Pyelitis post partum.....	1
Total.....	20

The postmortem diagnosis was laceration of the tentorium and pulmonary atelectasis. The mother received pentobarbital-sodium 7½ grains (0.5 Gm.) and scopolamine hydrobromide ¼½ grain at 3:15 a. m.; pentobarbital-sodium 1½ grains at 4:50; a combination of thymus extract and hypophysis extract 3 minims at 6:40, and the baby was delivered at 11:40.

CASE 3.—This was a low cervical cesarean section. There was no engagement after twenty-four hours of labor. The pelvis was generally contracted. The mother received pentobarbital-sodium 7½ grains and scopolamine hydrobromide ¼½ grain at 12:30 p. m.; pentobarbital-sodium 1½ grains at 1:30, 2 o'clock, 4 o'clock and again at 7:30; morphine sulfate one-

fourth grain (0.015 Gm.) at 9:35, atropine sulfate  $\frac{1}{50}$  grain at 7:20 a. m. and morphine sulfate one-sixth grain at 8:10. From 4:30 to 9:30 p. m. on the previous day 16 ounces of ether had been given by inhalation for attacks of pain. At 9 a. m. the baby delivered, weighing 7 pounds 14 ounces (3,573 Gm.). The postmortem anatomic diagnosis was high grade passive hyperemia and edema of the brain; ecchymotic hemorrhages of the thymus, pericardium and pleura, and cyanosis of all the thoracic and abdominal organs and of the skin of the surface of the body. The chief diagnosis was asphyxia neonatorum.

TABLE 5.—Fetal Mortality for Six Years

Evanston Hospital	1930	1931	1932	1933	1934	1935
Babies.....	903	848	745	692	745	864
Gross fetal mortality.....	4.1	3.0	2.8	3.6	3.0	4.03
Unavoidable.....	3.2	2.1	2.0	2.5	1.8	3.01
Obstetric mortality.....	0.9	0.9	0.8	1.1	1.2	1.02

TABLE 6.—Fetal Mortality of Group in Which Mother Received Pentobarbital-Sodium

	1933	1934	1935	Total
Pentobarbital-sodium.....	301	518	596	1,415
Gross fetal mortality.....	7, or 2.33%	11, or 2.1%	12, or 2.18%	31, or 2.10%
Unavoidable deaths.....	4, or 1.33%	8, or 1.54%	10, or 1.68%	22, or 1.55%
Obstetric mortality.....	3, or 1.0%	3, or 0.57%	3, or 0.50%	9, or 0.64%

CASE 4.—Mrs. K., a primipara, three weeks overdue, was delivered of a baby 47 cm. tall. The patient was not toxic. Induction two weeks previously failed. Induction was again attempted with 2 ounces (60 cc.) of castor oil at 6 a. m., 10 grains (0.6 Gm.) of quinine at 7 o'clock and 5 grains (0.3 Gm.) at 7:30. She then received 3 minims (0.2 cc.) of solution of posterior pituitary at 10:45 and again at 11:10. A bag was "inserted" at 5:30 p. m. One third grain (0.02 Gm.) of a mixture of opium and alkaloids was given hypodermically at 8:05. The fetal heart tones were poor and the bag was taken out at 9:05. The mother received 3 minims of solution of posterior pituitary at 9:32 and pentobarbital-sodium  $7\frac{1}{2}$  grains at 11:50. At 5:45 a. m. the pulse was 80 and the cervix dilated only 3 cm. At 10 o'clock atropine  $\frac{1}{50}$  grain was given hypodermically and a low cervical cesarean section was done at 11:02. The uterus was packed; hemorrhage occurred at 2:40 p. m. The patient had a chill, which was treated by transfusion at 4 o'clock. The temperature was 102 F. and the pulse 120. The diagnosis was atelectasis.

CASE 5.—The baby was born at full term and weighed 6 pounds 5 ounces (2,864 Gm.); there was a premature rupture of the bag of waters. The baby was born dead. The fetal heart beat had been satisfactory fifteen minutes before. There was velamentous insertion of the cord.

CASE 6.—A primipara at term delivered a baby by breech presentation weighing 6 pounds 5 ounces (2,864 Gm.). A torn tentorium and brain hemorrhage were found.

CASE 7.—A primipara had a toxic thyroid and was in the hospital one month previously. The baby, weighing 5 pounds 7 ounces (2,467 Gm.), delivered spontaneously at full term after labor of nine and one-half hours, with episiotomy. The tentorium was torn.

CASE 8.—A primipara after induction delivered at term a baby weighing 8 pounds 4 ounces (3,742 Gm.), with persistent ductus arteriosus and hydronephrosis.

CASE 9.—A quartipara was seventeen days past the date due in her first pregnancy in eleven years. Induction with castor oil and quinine failed, July 8, 1933. Fairly hard contractions persisted on and off for three and one-half days. The patient was given a mixture of opium and alkaloids and sodium amylal on and off for relief. July 11 one-third grain of a mixture of opium and alkaloids was given hypodermically at 1 p. m. and 3 grains of sodium amylal at 9:30. July 12, 3 grains of sodium amylal was given at 12:30 a. m. and again at 2:55, one-sixth grain of a mixture of opium and alkaloids hypodermically at 10:40, 6 grains of pentobarbital-sodium at 11:15 and  $1\frac{1}{2}$  grains

at 11:45. There was a rapid, unexpected delivery of a baby girl weighing 6 pounds 13 ounces (3,091 Gm.), at 12:15, a stillbirth. The baby did not breathe. The mother had a hemorrhage of 400 cc. after the third stage. The uterus was packed. Shock was treated by 500 cc. of acacia solution by vein and 1,000 cc. of Ringer's solution subcutaneously.

## COMMENT

Of the foregoing nine cases classified as obstetric fetal mortality, we feel that cases 1, 3, 4, 8 and 9 were influenced by the administering of various drugs. Cases 1, 3 and 4, however, can probably more justly be laid to faulty obstetric judgment as well as to the incorrect use of pain-relieving drugs. Case 9 constitutes a poorly handled case from the standpoint of pharmacology. Certainly no obstetric patient should receive a combination of one-half grain (0.03 Gm.) of a mixture of opium and alkaloids, 9 grains (0.58 Gm.) of sodium amylal and  $7\frac{1}{2}$  grains (0.5 Gm.) of pentobarbital-sodium during the twenty-four hours preceding the birth of her baby. An autopsy was done in all nine cases. Case 8 is included in the mortality influenced by drugs, regardless of the observations made at autopsy, because the hydronephrosis was not severe and many babies are found with persistent ductus arteriosus. The combination of induction and anesthesia may have been the cause. We have used the same combination of procedures many other times without any untoward effect.

Pediatric experience with the use of pentobarbital-sodium and scopolamine hydrobromide has failed to develop any serious objection. The new-born infant of a mother to whom this anesthetic was administered presents a definite clinical picture so distinct that not infrequently the physician is able to state "pentobarbital-sodium" or "no pentobarbital-sodium" without knowledge of the facts. Such an infant is somnolent, flaccid and pale. A slowing of the heart rate to as low as from 80 to 90 beats per minute may occur. Respira-

TABLE 7.—Unavoidable Deaths

Unavoidable Deaths	Cases	Autopsies
Under 7 months.....	5	4
Dead in utero before labor.....	7	7
Monsters.....	5	4
Influenza in mother; baby 35 weeks, icterus and pericarditis.....	1	1
Concretion of aorta.....	1	1
Cord tumor; term; weight 4 lb. 9 oz.....	1	1
7 months; placenta praevia; version; brain hemorrhage.....	1	1
Twin; version; pneumonia 17th day.....	1	1

TABLE 8.—Extent of Weight Loss of New-Born Infants

	Without Pentobarbital- Sodium, 100 Cases	With Pentobarbital- Sodium, 85 Cases
Average birth weight.....	7 lb., 4 oz.	7 lb., 6 oz.
Greatest loss, percent of birth weight.....	6.5	5.2
Home-going weight, per cent of birth weight.....	99.6	99.0

tions are shallow, there is little or no objection to handling, and vigorous crying is absent. The Moro reflex is partially suppressed. Indifference to the taking of fluids and to nursing is often present. External heat may be necessary to maintain a normal body temperature. Various degrees of this state exist, of course, depending on the dosage of the drugs and the time relative to delivery.

First contacts with such infants caused much pediatric alarm. Continued experience has shown that a normal, pink baby with a vigorous cry and usual

spasticity may be expected in from one to two days, comparable to other deep anesthesia. Personal communications from twelve pediatricians having the frequent opportunity of caring for babies at whose birth pentobarbital-sodium was used, asked if its effect was "such that it would cause us to decide to discontinue its use," were as follows: nine were favorable to its continued use, three were noncommittal, none were unfavorable. Factors mentioned were somnolence

TABLE 9.—Incidence of Breast Feeding on Leaving Hospital

	Without Pentobarbital- Sodium, 100 Cases	With Pentobarbital- Sodium, 85 Cases
Completely breast fed.....	37%	32%
Partially breast fed.....	43%	31%
Weaned .....	20%	37%

(eight), indifference to the taking of fluids and to nursing (five), bradycardia (four), pallor (three), flaccidity (two) and subnormal temperature (one).

One of us (R. B.) has studied random selections from his case records, seeking to determine the effect on the weight loss of the first few days of life and the relation of the home-going weight to the birth weight. No effect could be demonstrated, as summarized in table 8. He has also studied the incidence of breast feeding in "pentobarbital-sodium" and "no pentobarbital-sodium" infants, as presented in table 9. Apparently, infants born of mothers under this anesthetic stand a somewhat lesser chance of being breast fed. The difference, however, is very small. Perhaps the initial indifference to nursing may be a factor.

In February 1936 we sent letters to the last 500 women to whom we had given pentobarbital-sodium and scopolamine hydrobromide during labor and asked them to reply, stating their opinions of the procedure based on their own individual experience. We received 201 replies and we have tabulated their answers in table 10.

Of the three letters from those against the use of pentobarbital-sodium and scopolamine hydrobromide in labor, one came from a patient who received no benefit from the drugs whatever. She stated emphatically that the pains were so severe when she received the medication that she could not even see what color the capsules

TABLE 10.—Questionnaire Sent to Patients

Answers received.....	201
Enthusiastic.....	175
Given too late.....	18
No reaction from drugs.....	3
Noncommittal.....	2
Against its use.....	3

were and that they did not relieve her suffering. The second was from a mother having her second baby, who was disappointed because she did not awaken immediately after delivery to enjoy the sight of her new-born infant. The third objected to its use because the following day she was somewhat drowsy. Many of the letters that were received were from women who had had from three to six babies. A number from this group approved of this method of pain relief because it not only relieved the pains but enabled them to sleep and to escape the nervous shock which so often follows the delivery of the baby. They were of the opinion that rest and sleep following labor enabled them to recuperate much more quickly.

## CONCLUSIONS

1. Pentobarbital-sodium and scopolamine hydrobromide were used to allay the pain of labor in 1,415 cases, with a maternal mortality of 0.07 per cent, a gross fetal mortality of 2.19 per cent, an obstetric fetal mortality of 0.64 per cent and a maternal morbidity rate of 5.08 per cent.

2. Maternal mortality and morbidity are not increased.

3. Infant mortality is not increased.

4. Fetal morbidity is increased if one considers the somnolence, flaccidity and bradycardia produced in the infant. This condition, however, has not led to an increase in fetal mortality.

5. The method was used in 62 per cent of the women admitted while this study was in progress. This method, in common with all methods of pain relief, is not universally applicable. Whether it should be given or withheld should be decided by the obstetrician.

6. Since constant and intelligent observation of the patient and baby are essential, it is a procedure for the well organized hospital only. It should not be used in the home.

7. The reaction of the patients toward the use of these drugs for relief of pain in labor seems quite favorable.

8. Our results with this method have been sufficiently satisfactory to warrant its further use.

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## THE RELIEF OF LABOR PAINS BY THE USE OF PARALDEHYDE AND BENZYL ALCOHOL

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The ideal agent or combination for obtaining analgesia and amnesia during labor should be, first of all, safe for both mother and child. It should not unduly prolong labor and should give relief from pain early, as well as produce satisfactory analgesia and amnesia in a high percentage of cases. Moreover, it should be easily administered and adequately retained by the patient. Finally, it should be free from objectionable side actions, such as (a) excitement during the induction and recovery stages, (b) nausea and vomiting, (c) deleterious effects on the heart, liver, kidneys, lungs and respiratory center and (d) local damage to mucous membranes.

Further experience with a combination of paraldehyde and benzyl alcohol leads us to believe that such a mixture closely approaches this ideal and accomplishes more with fewer undesirable reactions than any other of the existing methods of relieving the pains of labor, thus confirming our preliminary report<sup>1</sup> presented about two years ago.

### SALIENT CHARACTERISTICS OF THE DRUGS

Paraldehyde ( $\text{CH}_3\text{CHO}$ )<sub>3</sub>, a polymer of acetaldehyde ( $\text{CH}_3\text{CHO}$ ), is a colorless liquid, soluble in

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1. Kane, H. F., and Roth, G. B.: Tr. Am. A. Obst. & Gynec. & Abdomin. Surg., 1934, p. 201; Am. J. Obst. & Gynec. 29: 336 (March) 1935.

water to about 10 per cent. It burns readily, has a disagreeable taste, possesses a characteristic pungent odor and is rather irritating to mucous membranes. However, it does not precipitate proteins unless contaminated with acetaldehyde. Its irritant action on mucous membranes is therefore probably due to its ready volatility and penetration into the loose tissues, thus resembling somewhat the volatile oils in this respect.

Pharmacologically it resembles ethyl alcohol rather closely but it is a more powerful narcotic than the corresponding primary alcohol. In small dosage (2 cc.) taken at the end of the day it acts as a hypnotic, but to secure this effect in an excitable nonpuerperal patient about an ounce (30 cc.) is required. The sleep that it produces closely resembles normal sleep; there are no marked after-effects and the sleep is usually refreshing. It was introduced into therapeutics as a hypnotic by Cervello in 1884.<sup>2</sup>

Paraldehyde is rapidly absorbed from mucous membranes, particularly when given undiluted and, less readily, when given in oils. Some of it is destroyed in the body, but the greater part is excreted as such by the lungs and kidneys, neither organ being damaged by it.

Benzyl alcohol ( $C_6H_5 \cdot CH_2OH$ ) is an aromatic alcohol, an isomeride of cresol which occurs naturally in certain balsams and oleoresins. It is a colorless fluid possessing a pleasing odor, slightly soluble in water (about 4 per cent) and readily miscible with paraldehyde. The pure substance is irritant as well as anesthetic when applied to mucous membranes. It will precipitate proteins but in 1:10 dilution with paraldehyde does no damage to the tissues. It is about half as toxic as cresol, being rapidly eliminated in the urine as hippuric acid.

Macht,<sup>3</sup> who introduced benzyl alcohol into therapeutics as a local anesthetic in 1918, found that the drug itself could cause analgesia through its central action when used in large but safe amounts in experimental animals.

It is absolutely essential that only pure drugs be used. The paraldehyde should meet the requirements of the United States Pharmacopeia and the benzyl alcohol those of New and Nonofficial Remedies. Paraldehyde may be contaminated with acetaldehyde, which reduces its hypnotic action and which, by precipitating proteins, may cause local injury to tissues.

As the taste of paraldehyde renders it objectionable to the majority of patients, the oral route for administration is not serviceable. Neither paraldehyde nor benzyl alcohol is suitable for subcutaneous use, as necrosis is frequently produced when so given. Paraldehyde is only mildly irritant to mucous membranes, but in many cases the irritation is sufficient to cause its expulsion when given by rectum. To insure retention of the drug, benzyl alcohol is added for the purpose of anesthetizing the rectal mucosa until the paraldehyde shall have been absorbed. By this means one avoids dilution of the paralydehyde with oil, which adds to the bulk of the injection, delays absorption and is frequently not retained.

The earliest report of the use of paraldehyde as the basic agent in labor was that of Rosen in 1932. In 1934 Colvin

and Bartholomew<sup>5</sup> presented a thorough analysis of a series of 100 cases in which the drug was employed. The former, however, preceded the injections of paraldehyde in oil by the oral administration of pentobarbital-sodium or sodium amytal; the latter used sodium amytal. To us it has seemed advisable to avoid the barbiturates, as we believe that they are more toxic, are more apt to cause excitement and add nothing of value which cannot be provided by paraldehyde. The recent report of Foote<sup>6</sup> on paraldehyde by rectum as a preanesthetic agent lends support to this belief. Comparing it with the barbiturates, he states: "It is safer, more rapid and certain in action, it can be used in bad risks, the postoperative state is quieter and the sleep more prolonged, complete amnesia is obtained and the sleep is refreshing."

#### PHARMACOLOGIC EXPERIMENTS ON UTERINE ACTIVITY

The main aspects of the pharmacology of paralydehyde have been described by Cervello<sup>2</sup> and others, summaries of which may be found in any standard textbook of pharmacology.

Nothing, however, seems to have been written about its effect on uterine motility. Accordingly we made a study of its effect on both isolated and intact uteri and found that paraldehyde in comparatively concentrated solution (1:12,500) was stimulating to the excised uterus of the guinea-pig and without effect on the rabbit uterus, while a 1:5,000 solution was usually depressant to both longitudinal and cervical segments of either rabbits or guinea-pigs.

In the intact rabbit anesthetized with paraldehyde strong rhythmic uterine movements were present, being uninfluenced by 10 cc. of 8 per cent supplemental paraldehyde given intravenously.

Rhythmic uterine movements were obtained also in the paraldehyde anesthetized cat, but they are weaker than in the rabbit, a difference which was regarded as due to species rather than an effect of the drug.

Pronounced rhythmic movements were produced in the cat by a small amount of solution of posterior pituitary. When magnified in this manner the movements were uninfluenced by the intravenous administration of an 8 per cent solution of paraldehyde and only slightly depressed (mainly in rate) by doubling this quantity.

Benzyl alcohol was found to be somewhat more depressant to isolated uteri than was paraldehyde, the depression of the cervix usually occurring before that of the horn.

When benzyl alcohol was given intravenously to either rabbits or cats anesthetized with paraldehyde, it was without effect on the uterus in as high a dosage as 3 cc. of a 3 per cent solution.

When used in combination with paraldehyde on isolated uteri of the rabbit and guinea-pig, simple summation rather than potentiation of effect resulted.

From these studies they concluded that both paraldehyde and benzyl alcohol were but mildly depressant to uterine muscle, the former being less depressant than the latter.

5. Colvin, E. D., and Bartholomew, R. A.: The Advantages of Paraldehyde as a Basic Amnesic Agent in Obstetrics. *J. A. M. A.* 104: 362 (Feb. 2) 1935.

6. Foote, R. R.: Paraldehyde as a Preanesthetic. *Brit. M. J.* 2: 278 (Aug. 10) 1935.

7. Roth, G. B., and Kane, H. F.: Proceedings of the American Society of Pharmacology and Experimental Therapeutics, 1936, annual meeting, Washington, D. C.

2. Cervello, V.: *Arch. ital. de biol.* 6: 113, 1884.

3. Macht, D. I.: *J. Pharmacol. & Exper. Therap.* 11: 263 (April) 1918.

4. Rosenfield, H. H., and Davidoff, R. B.: *New England J. Med.* 207: 366 (Aug. 25) 1932.

## SAFETY

Paraldehyde is commonly stated to be the least toxic of the hypnotic drugs.<sup>8</sup> The amount herein recommended has been found to be the minimal effective dose.

Benzyl alcohol also is of low toxicity; moreover, the quantity which is employed in this mixture is so small that its general narcotic effect is negligible.

The mixture has been used in the presence of heart, liver and kidney disease as well as in normal cases, with no harmful effects noted. Although the odor of paraldehyde may be present for several days on the breath of the babies, they apparently are unaffected by the drug. When ethylene is used in the perineal stage of labor, no delay in the initiation of respiration has been noted. After delivery under ether, however, there has been a tendency to mild apnea, but never to a dangerous degree. It would seem that the combination of paraldehyde and ether is not ideal for the baby.

## ADMINISTRATION EARLY IN LABOR

In most methods of pain relief, emphasis is placed on the withholding of analgesics until the cervix has reached a certain stage of dilatation or until the contractions have attained a frequency arbitrarily determined. The paraldehyde-benzyl alcohol mixture is given as soon as the patient complains of pain, without regard to the cervix, contractions, parity or condition of the membranes. Gwathmey and McCormick,<sup>9</sup> in their modification of Gwathmey's original method,<sup>10</sup> adopt the same plan.

## EFFECT ON LENGTH OF LABOR

In estimating the length of labor, it has been necessary to disregard the usual division into first and second stages. In most instances one stage merges imperceptibly into the other, and frequently the bulging perineum has been the first indication of full dilatation of the cervix. Although laboratory experiments have shown that paraldehyde has little effect in various animals, clinically it seems to lengthen somewhat the intervals between pains. This lengthening seems to be beneficial, probably through allowing time for the fatigued muscle to recover its tonus.

The mixture of paraldehyde and benzyl alcohol apparently softens the cervix and hastens dilatation. These factors seem to be responsible for the impression that labor has been somewhat lengthened in some cases and shortened in others.

The average time between the first rectal instillation of the mixture and the appearance of the presenting part at the outlet has been, in primiparas, seventeen hours and forty-one minutes; in multiparas, eleven hours and fifty-five minutes.

The duration of labor in primiparas ranged from one to fifty hours; in multiparas, from one-half to twenty hours.

The number of rectal instillations given, per case, was from one to ten, the average being four in primiparas and two in multiparas.

## RETENTION OF THE SOLUTION

Retention of the solution is practically always complete. When it is not retained it is almost certain evidence that the patient is in the second stage of labor with the presenting part low in the pelvis.

## ANALGESIA AND AMNESIA

Ordinarily the patient, when once under the influence of the paraldehyde-benzyl alcohol mixture, sleeps quietly, perhaps turning and moaning with each contraction. In these cases analgesia is presumed to be complete. Some patients will seem to become fully awake at each pain, will talk lucidly and even complain of suffering. When this occurs there is evidently some impression on the brain, but after labor there is absolutely no recollection of what has taken place. As amnesia is complete, these cases are regarded as having been successful. A few women remember unrelated events, such as the first inhalations of gas, remarks made by the attendants, or catheterization, but seldom do they recall having suffered. When labor is of less than three or four hours' duration and of the tumultuous type, one severe pain following another at intervals of two or three minutes, it must be admitted that the paraldehyde-benzyl alcohol mixture has little or no effect.

It is interesting to note that the patient may not go to sleep until after a second rectal instillation, but amnesia usually extends back to the first injection.

## FREEDOM FROM OBJECTIONABLE SIDE ACTIONS

Excitement to the point of tossing about or requiring restraint always indicates that the dose has been insufficient, that the effect is wearing off, that the presenting part is approaching the perineum or, as is most frequently the case, that the rectum contains fecal matter which is interfering with absorption of the drugs.

Nausea and vomiting have not been noted from the use of paraldehyde-benzyl alcohol.

Laboratory experiments have shown, and clinical experience has confirmed the fact, that there are no deleterious effects on the heart, liver, kidneys, lungs or respiratory center. As paraldehyde is excreted largely through the lungs, it is perhaps contraindicated in the presence of pneumonia, but it has been used successfully in one case of active pulmonary tuberculosis. No patient has shown evidence of proctitis.

## TECHNIC OF ADMINISTRATION

1. Of particular importance is the thorough cleansing of the lower part of the bowel and rectum with a soapsuds enema followed by irrigations with physiologic solution of sodium chloride until the return is absolutely clear.

2. The dose of paraldehyde is 1.2 cc. to each 10 pounds (4.5 Kg.) of the weight of the woman at the beginning of labor.

3. The dose of benzyl alcohol is always 1.5 cc. As the action of this drug is largely that of a local anesthetic, the dose does not vary with the weight of the patient.

4. To the required amount of paraldehyde is added 1.5 cc. of benzyl alcohol and the mixture is instilled by gravity into the rectum by means of a funnel and a large catheter, which is inserted for a distance of about 4 inches (10 cm.). As the solution disappears it is followed by not more than 30 cc. of physiologic solution of sodium chloride to wash out the catheter and distribute the drug. The bulk of the injection is so small that the instillation can be made between two contractions. While there is seldom any tendency for the patient to expel the solution, it is recommended that during at least two pains the buttocks be compressed and the patient be asked not to "bear down."

8. Miller, A. H.: *Anesth. & Analg.* 15: 14 (Jan.-Feb.) 1936.  
9. Gwathmey, J. T., and McCormick, C. O.: *Ether-Oil Rectal Analgesia in Obstetrics*, J. A. M. A. 105: 2044 (Dec. 21) 1935.  
10. Gwathmey, J. T.: *New York State J. Med.* 98: 1101, 1913.

5. Paraldehyde-benzyl alcohol is given as soon as the patient complains of pain. The dose, and always the full dose, may be repeated if necessary, one and one-half hours after the first. As labor progresses it will be found that the effect of each successive injection is more lasting, the intervals between repetitions becoming three, four or five hours.

6. If the patient is awake one-half hour after the initial instillation of the rectal solution, one-fourth grain (0.015 Gm.) of morphine is given subcutaneously. It is rarely necessary to repeat the morphine, although in long labors it has occasionally been repeated with no apparent harm.

7. When several doses of the mixture are given, the rectum should be irrigated with physiologic solution of sodium chloride before each alternate instillation.

8. To minimize dehydration, a glass of orange juice or water should be given before each injection of paraldehyde-benzyl alcohol. The patient is usually capable of cooperation to the extent of drinking; otherwise dextrose, intravenously, may be given.

9. Since the patient is not conscious of bladder distention, catheterization is performed every eight hours.

10. Too much emphasis cannot be placed on the necessity for repeating the rectal injection when the patient begins to awaken, not after she has become restless.

CLINICAL OBSERVATIONS

The degree of success depends somewhat on the length of labor. In the case of a multipara, in labor for only one or two hours, this method of treatment is practically useless; to the primipara with a slowly progressing occiput posterior it gives complete relief. The fact that the patient is not suffering lessens the temptation to early and perhaps dangerous interference with labor.

Observation of these cases has strengthened the belief that the value of voluntary contraction of the abdominal muscles has been greatly overestimated. Although

TABLE 1.—Results in Six Hundred and Eleven Cases Studied

	Group A Annesia and Analgesia	Group B Annesia and Partial Analgesia	Group C Memory of Events, No Pain	Group D Memory of Some Pain	Group E Little or No Relief
Primiparas.....	240	99	5	3	9
Multiparas.....	108	73	24	13	38
Totals.....	348	171	29	16	47
Percentage.....	57	28	4.7	2.6	7.7

these women are not allowed to strain and pull on straps, the second stage of labor progresses as rapidly as in cases in which the patients attempt to cooperate.

In certain cases, particularly in multiparas, it is possible to accomplish spontaneous delivery without a general anesthetic. As a rule, however, the patients are only semiconscious and it is difficult to maintain aseptic technic. Delivery by outlet forceps under a general anesthetic, preferably ethylene, is therefore recommended in cases which ordinarily would need no assistance.

Some methods of analgesia are said by their proponents to be safe for use in home deliveries. We feel, as do Irving and his associates,<sup>11</sup> that any person

who has been rendered unconscious by drugs should constantly be under the observation of a trained attendant.

This method, we believe, should be administered in the home only when the physician is prepared to remain with the patient throughout the duration of labor.

RESULTS

In estimating the value of the paraldehyde-benzyl alcohol mixture as an agent for securing analgesia and amnesia, the cases have been separated into five groups. Group A consists of those patients who have slept quietly throughout labor. In group B are those patients who have moved about, at times seemed to be completely rational and complained of pain; amnesia, how-

TABLE 2.—Stillbirths and Neonatal Deaths

Premature, 7 months or less.....	11
No fetal heart sounds heard before labor.....	2
Intracranial hemorrhage .....	4
Fetal heart sounds ceased during labor.....	3
Total.....	20
Percentage.....	3.3

ever, in this group is complete. The patients who remember unrelated events but no pain constitute group C. Those who remember having had some pain but whose suffering was greatly relieved are placed in group D. In group E are those who received no benefit from the method.

Table 1 shows the results in the 611 cases that we have studied. More than 1,000 additional patients have been treated by other physicians according to the technic described in this paper. While statistics in these cases are not available, those who have observed them agree that the results as tabulated fairly represent their experience.

Complete relief from the memory of pain was accomplished in 89.7 per cent, partial relief in 2.6 per cent and no relief in 7.7 per cent. All but four of the patients in groups D and E were in labor less than four hours.

From table 2 it will be noted that there were 3.3 per cent of stillbirths and neonatal deaths; three, or less than 0.5 per cent, were from causes undetermined and may be charged to the method. However, since two such deaths had occurred in our preceding 1,000 cases before any anesthetic had been given, it is possible that the use of paraldehyde and benzyl alcohol may not have been the cause.

SUMMARY

1. The combination of paraldehyde and benzyl alcohol administered rectally produces complete amnesia without unduly prolonging labor in practically all cases in which labor is of more than four hours' duration, without causing ill effects on either mother or child.
2. The solution is retained without difficulty except when the presenting part is pressing on the rectum.
3. There have been no cases of proctitis or other evidence of local damage to tissue.
4. Excitability of the patient is present only when the technic of administration has not been properly carried out.
5. These women are not subjected to the fatiguing exertion of "bearing down" and pulling on straps; they are spared the psychic shock of pain; they have

11. Irving, F. C.; Berman, Saul, and Nelson, H. B.: Surg., Gynec. & Obst. 58: 1 (Jan.) 1934.

no memory of suffering, and they sleep quietly for from six to twelve hours after labor. As a result, they awaken actually refreshed.

6. Increased experience with this method of pain relief has shown that success depends largely on strict attention to the details of administration.

1835 Eye Street N.W.—1335 H Street N.W.

### ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. KREBS, WULFF AND WASSERMANN,  
DRS. GALLOWAY, GRIER AND BLESSING, AND  
DRS. KANE AND ROTH

DR. BUFORD G. HAMILTON, Kansas City, Mo.: The majority of women can be delivered safely without sedatives—probably most women would be in better condition if morphine were used judiciously. Women may be given sedatives and have no remembrance of their labor; unfortunately, this cannot be done in every case. The successful termination of labor depends on the management of each stage of labor. Sedatives do interfere when not properly supervised. That there is a close relation between sedation and intervention is well known. It is also known that intervention is exacting its toll of lives of American women. The point that concerns me is that I do not know the threshold of pain and that I cannot measure the force of pain. Measuring the dosage for each individual patient has been my problem. Two patients are given sedatives at what is considered the ideal time. Both deliver normally in four hours without any remembrance of pain. Later, two similar patients are treated in the same way only to be delivered artificially. I cannot think the patient was at fault but that it was the administration of sedatives. In discussing this situation with outstanding obstetricians I find that they have the same problems. One can only conclude that American obstetrics has become a competitive problem to please women instructed by lay magazines. Intervention because of fetal distress is a part of the picture. All have experienced these anxieties and have felt that sedatives produced the condition. For these reasons it would seem that our only honest promise to patients must be sedatives in such doses as will be safe for both the mother and her unborn child. The necessity of supervising all patients given sedatives must never be lost sight of, since obstetric success can be measured only by results.

DR. JOSEPH B. DE LEE, Chicago: I feel very decidedly that the magazines and the competitive practices of doctors have increased the fear of having a baby in the minds of the public. Anesthesia may be divided into anesthesia of the first stage, or analgesia, and anesthesia of the second stage. The first stage anesthetics or analgesics are morphine and scopolamine, so-called twilight sleep. The original twilight sleep is passé. Nobody uses that now because in the best of hands in Europe it showed an irreducible mortality of 1 per cent. I am going to take up the personal element in the use of drugs in order to produce a more or less painless labor. The success of all anesthetics depends on the doctor. Abnormal states of the mind can cause spastic conditions of unstriated muscular organs, such as the stomach, the heart and the colon. Why cannot the uterus be affected by the mind? Many patients are cured by faith in their doctor, and it makes little difference what medicine he gives. Hippocrates said "The physician amuses the patient while the gods cure him." The notorious Mr. Coué showed what could be done by faith and nature. Suggestion is a powerful adjunct to all our remedies and we doctors have let the cultists run away with it. I have not seldom prescribed 20 grains (1.3 Gm.) of sodium bromide for sleep, telling the patient that the effects of the powerful sedative would last two or sometimes three nights. Pure suggestion has made these women sleep through two or three nights. I always apply the psychologic laws of suggestion in my practice, and I have even employed hypnotism. One has to be careful in the use of hypnotism, especially to avoid catalepsy, which is very dangerous. Those who try hypnotism should remember to use posthypnotic suggestion. In Heidelberg some years ago the experiment was made in the seventh month of pregnancy in which the woman was given intense suggestion of painless labor and that carried through until term. Suggestion is a

matter of personality. Its success depends on faith. Faith is given to a doctor who has, as King Solomon said, an understanding heart. If one can bring the patient's mind into a proper evaluation of the nature and purposes of labor, the first stage can be conducted with a minimum of anesthetic agents, and it is not a far cry to say that perhaps contraction rings will be to a large extent eliminated, labor assuming a more normal course.

DR. JOSEPH L. BAER, Chicago: From the conclusions of the authors we must find that there is still much lacking in what they hope for from the methods they employ. If that is so, the method employed is to a definite degree defective. There is no doubt in my mind that beginning with the propaganda tour of Drs. Krönig and Gauss, publicized by *McClure's Magazine* twenty-odd years ago, there was infiltrated into American womanhood this demand for painless labor which has been timidly yielded to by the American medical fraternity. It behooves us to stem that tide in the interest of our obstetric patients and their babies. In Michael Reese Hospital ever since my connection with it a little over thirty years ago, the standard relief of women who need relief in labor has been morphine. Morphine still occupies, in my opinion, the front rank as an analgesic in labor. Over 50 per cent of all women in the United States are delivered in the home, and of those delivered in institutions only a very small group is in institutions sufficiently well regulated and sufficiently well nursed to warrant the application of these various methods with which we are all experimenting, and which require the maximum of constant medical and nursing care. Therefore, for American women in general we must still urge the safe, sane method of obstetric analgesia when indicated, and, I repeat, morphine offers that relief. Every woman in labor is a potential emergency major surgical risk wherever she may be. To mask her symptoms under the prolonged effect of powerful amnesic or analgesic agents and leave her to the observation of relatives or an inadequate hospital staff when she is a potential emergency major surgical risk I regard as culpable evasion of responsibility not justified by the clamor of the uninformed patient.

DR. RUDOLPH W. HOLMES, Chicago: I feel that an obstetric utopia will come when we shall have a drug which shall be utterly innocuous to mother and child, shall have no influence on the phenomena of labor, shall cause no interference with the intensity of contractions or their rhythmic course, and shall not rob the woman of those voluntary efforts which are so essential during the expulsive period of labor. Not one of the drugs which have been popularized of late meets these criteria. Some are highly inimical to mother or baby, or both, and all demand an excessive incidence of operative intervention. I have the misfortune to be among the first to bring scopolamine to the United States, in 1901. I employed it on various patients and with disastrous effects. Its wide exploitation in 1913 under the name of twilight sleep prompted me to try the drug again, for various pharmaceutical houses declared that the previous disasters were from the use of impure drugs. At this time I had documentary assurance that scopolamine was unobtainable. In view of the fact that the recovery of scopolamine from scopolus was so expensive, and in view of the fact that hyoscine was chemically, spectroscopically and physiologically identical in action to scopolamine, the only marketed product was hyoscine under the label of the former. In each trial I found numerous instances of the untoward effects, with fetal deaths greater than in other means of allaying pain. I feel that hyoscine in combination with morphine is just as great a menace today as it was in 1913. We all know that obstetric mortalities have not decreased in twenty years. Institutional deaths are essentially the same as they were 100 years ago. I have the results of a study comprising 240,000 births in 490 hospitals, with a total maternal loss of 0.8 per cent. The Rotunda Maternity a hundred years ago had a maternal loss of 0.9; this rate is infinitely less than that of some hospitals of modern times: 2 per cent, 4 per cent were not infrequent, and in one it was over 7 per cent. Modern obstetric practices have transferred, in comparison to the Rotunda figures, stillbirths to neonatal deaths, the net result being that fetal (infant) losses are as they were a hundred years ago. I cannot see that it is good obstetrics in a highly organized hospital to paralyze a parturient with drugs, subject her to the expense of engaging a special

nurse, and then perforce use operative interventions to the extent of 85 per cent of all labors.

DR. NICHOLSON J. EASTMAN, Baltimore: From a statistical point of view one can be readily convinced that the analgesic methods yield satisfactory results, since amnesia is produced in a substantial majority of the cases and since the end results, both for mother and for child, compare favorably with our best standards. We must, however, face squarely the fact that both barbiturate analgesia and scopolamine-morphine analgesia affect the infant profoundly. This statement is based on the following considerations: 1. Barbiturates pass rapidly from mother to fetus. In a dog or in a rabbit they are demonstrable in the fetus within fifteen minutes after they have been given to the mother. 2. In a series of Baltimore cases in which pentobarbital-sodium was given in doses of from 6 to  $7\frac{1}{2}$  grains (0.4-0.5 Gm.), the amniotic fluid was meconium stained in 16 per cent of the cases. In an additional series in which to the pentobarbital-sodium analgesia were added morphine, one-sixth grain (0.01 Gm.), and rectal ether, 75 cc., the amniotic fluid was meconium stained in 40 per cent of the cases. The end results in these infants were satisfactory, but the inference to be drawn from this high incidence of meconium stained amniotic fluid would seem clear enough. 3. Since the time of Ahlfeld it has been suspected that the fetus in utero makes respiratory movements, and Ahlfeld advanced the view that the onset of respiration occurs—at least the onset of respiratory movements—not at the moment of birth but sometime back in intra-uterine life just as the cardiac action does. During the past year, Snyder and Rosenfeld of our institution have demonstrated intra-uterine respiratory movements of the fetus in the rabbit, the cat, the dog, the guinea-pig and the monkey. These thoracic movements, which are clearly visible through the intact uterine wall, are rhythmic in character, of a rate between 20 and 60 per minute, and are obviously of a respiratory nature. Now if, while one is watching these rhythmic thoracic excursions, the mother animal is given either morphine or barbiturates, these movements stop at once. 4. As a result of the observations of Irving, Berman and Nelson of Boston, it is known that babies born of mothers who have had neither analgesia nor anesthesia cry immediately in about 98 per cent of the cases; babies born of mothers who have had nitrous oxide analgesia breathe immediately in about 80 per cent of the cases, whereas babies born of mothers who have had scopolamine-morphine or barbiturate analgesia cry immediately in from 33 to 65 per cent of the cases. In view of these circumstances it would seem justifiable to conclude that these analgesics exert a depressing effect on the baby. Full-term infants seem to withstand this satisfactorily, provided there are no other complicating factors.

DR. GEORGE J. L. WULFF, St. Louis: Drs. Krebs, Wulff and Wassermann have shown the fetal mortality in our study of 4,000 consecutive deliveries. Frequently the objection is made that twilight sleep causes increased fetal apnea. Last year I studied a series of 1,000 consecutive deliveries at St. Louis Maternity Hospital, with regard to those factors which I felt might be said to cause delayed cry and respiration. Among these were included the type of semimarcosis used, the type of anesthetic used and the incidence of operative deliveries. Premature infants, twins and those delivered by cesarean section were omitted from the series for obvious reasons. Of the total series, 16.3 per cent of the babies had delayed cry and respiration. Two hundred and seventy-five mothers had no semimarcosis, and this group served as our control. Five and five-tenths per cent of these babies were apneic. In the case of the 360 mothers who received morphine with scopolamine, 24.7 per cent of the babies had a delayed cry; in 188 cases with dilauid and scopolamine, 24.5 per cent; in 120 cases in which sodium amyltal was used with scopolamine, 6.7 per cent; in forty-seven cases in which pentobarbital-sodium and scopolamine were used, 8.5 per cent; in nine with sodium alurate and scopolamine, 11.1 per cent, and no apnea in the single case of ortal sodium with scopolamine. Using 5.5 per cent as our standard without scopolamine, it seems obvious that the use of either morphine or dilauid with scopolamine probably increases the incidence of apneic babies, while in the cases in which the barbiturates were used the incidence more nearly approached that of the control group. The relationship of the type of delivery to fetal apnea was considered next. In the 372 cases in which

delivery was spontaneous, 13.1 per cent of the babies required resuscitation. In 557 cases in which perineal forceps were used, there was 15.9 per cent of apneic infants. Of the thirty-three cases of breech presentation, there was delayed respiration in 39.4 per cent. In thirty-six cases of vertex presentation the head was rotated with forceps from the transverse or posterior position, and 27.7 per cent of these showed definite apnea. Only two cases of version were done and both babies were apneic. The differences in this analysis may be explained by the difficulty of the procedures carried out during delivery. The last analysis compares the types of anesthetics used. Fifty-eight mothers received no anesthetic and 8.6 per cent of these babies were asphyxiated. Six hundred and eighty-eight mothers received chloroform during the delivery of the infant and 16.5 per cent of the babies were apneic. Nitrous oxide was used in 223 cases, 15.6 per cent of these infants requiring resuscitation. Ether was used in thirty-one cases, and these showed a 29 per cent incidence of apnea.

DR. FREDERICK V. ENMERT, St. Louis: Dr. Siegfried Goldschmidt and I desire to introduce a method of analgesia in labor which, to our knowledge, has not been used in this country. It is a new barbiturate, sodium amyl beta bromallyl malonylurea, and is given rectally. We induce the analgesia when labor is definitely established and the cervix is dilated to two or three fingerbreadths. Ten cubic centimeters of the solution is given by means of a small catheter as high rectally as possible. The effect is noticeable after from ten to fifteen minutes, causing drowsiness and sleep between contractions. In the majority of our cases there were no signs of restlessness. We found no objectionable interference with labor in respect to frequency and force of contractions. The analgesia lasts normally from three to four hours and as long as eight hours. We saw no undesirable effects on the mother. A great number of the babies were born spontaneously, entering the world in good color and crying lustily. The explanation of this behavior is the rapidity and complete destruction of the drug in the liver, so that only traces can be found in the urine of the patient immediately after delivery. With this method we find labor hastened and the color of the patient, respirations, blood pressure and pulse unchanged. There have been no complications, except one occipitoposterior position. No postpartum hemorrhages have occurred. Thus far we have delivered twenty-five cases by this method. The average length of labor after the administration of the drug was three hours and ten minutes. The analgesia was complete in 75 per cent, incomplete in 25 per cent. The amnesia was complete in 80 per cent and partial in 20 per cent. There were no maternal or fetal deaths.

DR. P. B. RUSSELL JR., Memphis, Tenn.: I am inclined to express my appreciation to those men who think something of analgesics. Never have I found the operative incidence increased as the result of using analgesia. If a man is given relief for the pain of a passage of a ureteral stone, a woman is entitled to the same care when she suffers the agonizing pains of labor. A patient can ease through the first stage of labor without complications if the analgesia is not abused. There is no need for any operative procedure other than the low forceps: the prophylactic forceps technic as described by De Lee. This will save the structures of the perineum and there will be no lacerations and no need for perineorrhaphy or colporrhaphy, which is not the case with the spontaneous delivery.

DR. S. KENDIG WALLACE, Baltimore: I feel that obstetric analgesia should be used only in cases of prolonged labor. I want to call attention to some of the disadvantages of the methods already presented. Morphine given from four to six hours before delivery is dangerous;  $7\frac{1}{2}$  grains (0.5 Gm.) of pentobarbital-sodium at one time is quite a large dose. In the case of paraldehyde, it seems that the patient is so sound asleep that she cannot bear down, cannot void and must be catheterized every eight hours. I should like to mention the method that was presented last year in Atlantic City, the modified Gwathmey method, in which one begins with 3 grains (0.2 Gm.) of pentobarbital-sodium by mouth and gives the Gwathmey ether, quinine and alcohol by rectum a half hour later. One gets the patient asleep with the two capsules and the ether and she wakes up and has a pain and goes back to sleep. The advantage in the long labor is that there is no need to intervene. One can wait because the patient sleeps between the pains. A nurse

is not needed and the quinine stimulates the pains. The only disadvantage is the burning when the ether is given.

DR. OTTO S. KREBS, St. Louis: Thorough analysis of our results have been on record for a good many years and has shown the harmlessness of scopolamine-morphine semianarcosis in competent hands and in proper surroundings. Dr. Hamilton does not find any of the methods at hand uniformly satisfactory and rather deprecates their use. In St. Louis, some of us spend a great deal of time with our patients in labor, remaining with the woman, so far as possible, from the time active labor has begun to its completion. For the obstetrician who comes to the patient only in time to deliver her, there is no need for analgesia; but if he followed the progress of labor with her, his point of view probably would change. To be with a parturient woman for hours and not to be able to feel reasonably sure one is making the ordeal more bearable would make obstetric work intolerable to me and I would give it up. Morphine, which Dr. Baer uses entirely, we know to be the potent factor in delayed fetal respiration since 1906, further emphasized in 1915, and we have been able by modifying our technic to reduce the dosage or limit its use with improved results. Dr. Eastman reports an anoxemia and effect on intra-uterine respiration produced by various anesthetic agents and analgesics. Whether this condition in the fetus is of any danger or consequence to the child has not been established. Since we who use these agents so extensively find such uniformly satisfactory results, and since our figures in thousands of cases over twenty years show a fetal mortality comparing favorably with any and better than most clinics in this country, might not this fetal effect be a protective mechanism? Dr. De Lee states that "twilight" is "passé," that it is no longer being used in Europe. If Dr. De Lee would turn to St. Louis he would learn that it has been used safely and successfully in more than 5,000 cases there in one hospital since 1929. I was not surprised to hear Dr. Holmes's assault on the drugs. In 1923 in San Francisco he made almost the identical speech, except this time he mislaid his keynote phrase, "scopolamine, the murderous drug," which was his opinion at that time based on his experience with one case.

DR. ROBERT M. GRIER, Evanston, Ill.: I suppose I should cringe to come up on this platform after all the fear instilling remarks of some of the discussers. Their criticism is uncalled for. Pentobarbital-sodium is not a perfect drug. We have mentioned the points of disadvantage in our contraindications. Until such fantastic methods as hypnotism and the like can be used, we are satisfied with the effectiveness and safeness of pentobarbital-sodium. The figures of our results should speak for themselves. We have watched our results carefully and feel that so far it is a good analgesic in labor. Some day a better method will come into use, but we shall continue using these drugs until it does. We feel that a woman is entitled to relief from the pains of labor and that they are real and cannot be passed off lightly by the power of suggestion.

DR. HOWARD F. KANE, Washington, D. C.: The reason I tried to find some method of relieving pain in labor was not entirely to please the women but because I felt that obstetric shock was just as much an entity as surgical shock. Fear, fatigue and pain are factors in obstetric shock. I felt that if the patient could be spared the fear and the shock from pain itself she would be spared the shock and would be in better condition and a much better risk as a surgical emergency, as Dr. Baer pointed out. No method is entirely successful, but an attempt is being made to find one. These patients are in much better condition post partum. Their strength comes back sooner, they are able sooner to take care of their babies, and altogether they are in better condition. Dr. Hamilton said that these methods are not available to many women. That is true, but why deprive the women who can have it simply because some cannot?

**Nature of Hunger.**—Hunger is a primitive, elemental sensation. It is felt as a dull ache or gnawing pain, referred to the midchest region or somewhat lower. Unlike appetite, it is not associated with desire for any particular food. It does not invite men to eat, it drives them to do so.—Cannon, W. B.: *Digestion and Health*, New York, W. W. Norton & Co., Inc., 1936.

## Clinical Notes, Suggestions and New Instruments

### ENCEPHALOGRAM SYRINGE

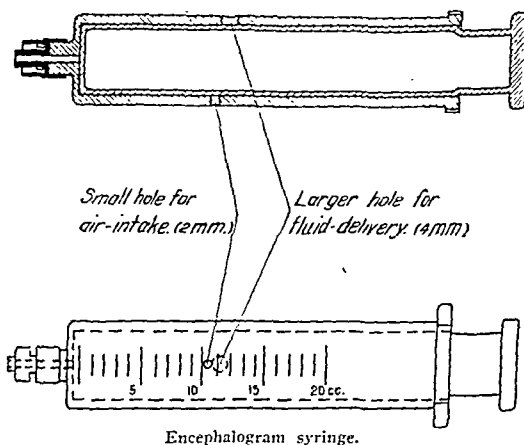
WARREN T. BROWN, M.D., NEW HAVEN, CONN.

The accompanying drawings illustrate a simplified instrument for the withdrawal of spinal fluid and injection of air for purposes of encephalography.

The 20 cc. Luer-Lok syringe<sup>1</sup> is altered by drilling two holes in the barrel on opposite sides. A small hole, 2 mm. in diameter, is drilled just behind the 10 cc. graduation mark with its forward edge tangent to the mark. A larger hole, 4 mm. in diameter, is drilled on the under side of the barrel with its forward edge directly opposite to the back edge of the small hole on the top side of the barrel.

#### THE WORKING PRINCIPLE

With the patient in a sitting position, a lumbar puncture is done in the third or fourth lumbar space, and a pressure reading is taken. The manometer is removed, and the syringe with the plunger drawn to the 10 cc. mark is attached to the needle by the Luer-Lok device. The 10 cc. of air is injected, and the fluid is allowed to enter the syringe, pushing the plunger back



Encephalogram syringe.

by its own pressure. It may be necessary to rotate the plunger with the fingers to prevent its sticking or becoming lodged. When the end of the plunger reaches the 10 cc. mark, air enters through the small hole and the plunger can be drawn back some 6 mm. to open the larger hole and allow the 10 cc. of fluid to pour into a beaker held by an assistant. The fluid pours out in about three seconds or less and the barrel is simultaneously filled with air through the small hole on the top side. When the plunger is then pushed forward to the 10 cc. mark, the barrel chamber is closed by the plunger blocking both holes. The 10 cc. of air it contains is then injected. Should the withdrawal or injection of larger amounts be desired, the holes can be closed by the thumb and forefinger of the sterile gloved hand and released at the point desired. When the fluid has flowed out, the holes are again closed and an equal amount of air is injected.

Intermittent pressure readings may be taken by removing the syringe after injecting air and applying the manometer to the needle.

An instrument of this type has been used by me in doing air injections for encephalography in the Department of Psychiatry of the New Haven Hospital, New Haven, Conn., for a period of one year and has been found to simplify and facilitate the procedure.

333 Cedar Street.

1. Manufactured by the Becton Dickinson Company.

## Therapeutics

### THE THERAPY OF THE COOK COUNTY HOSPITAL

EDITED BY BERNARD FANTUS, M.D.  
CHICAGO

NOTE.—In their elaboration, these articles are submitted to the members of the attending staff of the Cook County Hospital by the director of therapeutics, Dr. Bernard Fantus. The views expressed by various members are incorporated in the final draft for publication. The articles will be continued from time to time in these columns. When completed, the series will be published in book form.—Ed.

#### THE THERAPY OF (HORSE) SERUM REACTIONS

GENERAL RULES IN THE ADMINISTRATION OF THERAPEUTIC SERUMS

IN COLLABORATION WITH DR. SAMUEL M. FEINBERG

In a number of diseases, serum therapy is life saving and hence obligatory; in some instances, intravenous injection of the serum is the only mode of administration by which therapeutic results can be obtained. In some—fortunately rare—cases, serious sickness and even death may result from serum administration, particularly when improperly given by the intravenous route.

#### DIAGNOSIS

*Ordinary Serum Sickness.*—Nine or ten days after injection, a painful and itching swelling at the site of the injection is noted. Soon fever develops, accompanied rarely by nausea and vomiting. A day or two later a rash appears, which is generally urticarial and causes itching. There may also be more or less generalized edema. The joints are frequently painful and tender, although not often enlarged. Sometimes peri-articular edema and fluid in the joints occur. There is generalized swelling and tenderness of lymph nodes, with the regional ones usually the first to be involved. The urine sometimes shows albumin. Occasionally there are neurologic complications. There is usually a total diminution of the white cells, with a relative lymphocytosis. In a few days the patient is perfectly well. The whole process is annoying but almost invariably harmless.

This type of serum reaction is unpredictable, as the preliminary skin test is negative. It depends somewhat on the quantity of serum given and the rapidity with which it is administered. For instance, 90 per cent or more of white persons will react in such a manner if a large amount of serum is given intravenously. If it is given subcutaneously the percentage becomes smaller, but it also depends considerably on the dose. Thus, while 3 cc. will result in reactions in possibly 10 per cent, 30 cc. will produce them in 30 per cent, and 100 cc. will give them in 80 per cent of cases.

The reason for the incubation period is the interval required for the formation of antibodies, which at the time of serum sickness can be found in the blood. Later the skin tests become positive.

*Accelerated Serum Disease.*—If the patient has previously had a serum injection, the "accelerated" type of reaction may occur following the next injection. The symptoms are similar to those described under serum sickness, but they come on after a shorter incubation period, possibly within a few minutes, a few hours, or up to three or four days following the injection. The

manifestations may differ in no way from those previously described, but usually they are much more severe and alarming. There is a generalized erythema, with urticarial swellings. The pulse becomes weak and the blood pressure falls. Syncope or unconsciousness may result. The mucous membranes may be involved, with the production of sneezing, lacrimation, dyspnea and wheezing. Indeed there is a possibility of "allergic shock," which may terminate in death.

These reactions are due to the administration of a previous sensitizing dose of the serum. Unlike ordinary serum sickness, they can be anticipated by the demonstration of positive tests to serum.

*Allergic Shock.*—The person in whom allergic shock occurs almost always is one who is "naturally" sensitive to the serum. The person who is naturally sensitive to horse serum is one who is sensitive to horse dander. This fact can be frequently elicited by the history obtained from the patient. He may be aware that being in the vicinity of horses may bring on an attack of rhinitis, coughing or dyspnea. As a person may be clinically sensitive to horse dander without his knowledge, one should inquire whether he has hay fever or asthma, eczema, or similar manifestation of natural sensitiveness. It is also advisable to inquire into a history of allergy in the family.

True, not all people who are clinically sensitive to horse dander are sensitive to serum. It has been shown that horse dander contains two antigens, the dander antigen (A) and a small amount of the serum antigen (B). If one is sensitive to both of the antigens in the dander, A and B, he will be sensitive to serum. If, on the other hand, he is sensitive only to antigen A, serum will not produce any reaction.

Injection of horse serum into a person who is sensitive to horse dander and serum is an extremely serious undertaking. A reaction is practically certain to occur, even if the amount of serum administered is comparatively small. Large quantities of serum are likely to be extremely dangerous and even one or two drops have been known to kill. The reactions are of the "immediate" type, occurring from several minutes to two or three hours following injection. The mildest reactions consist of a suffusion of the face, some urticarial eruption, stuffiness of the nose, sneezing and asthma. In the more severe cases these symptoms may or may not be present but the main manifestations are varying grades of unconsciousness, loss of reflexes and sphincter control. In the most severe reactions there may occur marked distention of the lungs, with cessation of respiration and death within a few minutes.

#### PROPHYLAXIS

These three types of serum reactions have been thus described in order to emphasize the importance of investigating the history and the sensitivity of every patient who is to be given an injection of therapeutic serum.

*History.*—The following are important questions to ask the patient: Is there hay fever, asthma or eczema in the patient's family? Is the patient subject to allergic manifestations, such as hay fever, vasomotor rhinitis, eczema, asthma or drug idiosyncrasies? Has he ever been around horses? If so, does such exposure produce sneezing, blocked nose, itching of the eyes, coughing, wheezing or dyspnea? Has he had a previous serum injection? How long ago? Has he ever had a serum reaction, particularly in the last four or five months?

**Tests for Sensitivity.**—Such tests should be made on every patient in whom serum administration is contemplated. For the purposes of testing, diluted normal horse serum or the diluted immune serum is used. For a preliminary test the serum should be no stronger than 1:100; i. e., one part of serum to 99 parts of physiologic solution of sodium chloride.

The intracutaneous test consists of the injection of a small amount, 0.05 cc. or less, of diluted serum into the epidermis so that a small wheal is raised. A positive reaction consists of an urticarial swelling with central blanching, peripheral erythema and itching. This occurs within five to twenty minutes.

By the ophthalmic test is meant the instillation of one drop of the diluted serum into the conjunctival sac. A positive reaction usually occurs in a few minutes. It consists of slight injection of the conjunctival vessels and itching, if the response is mild; and marked injection with edema of the conjunctiva and lids, if the reaction is severe. The test should be made first with 1:100 serum dilution. Only if it is negative should a 1:10 dilution be tried. In case of a marked conjunctival reaction it is advisable to instil a drop or two of Solution of Epinephrine into the sac. The ophthalmic test is generally considered a more true indication of clinical sensitivity.

The following routine procedure is recommended: If there is no history of allergy (asthma, hay fever) and an intracutaneous test with 1:100 serum is negative, an intracutaneous test with 1:10 serum should be made. If the latter is negative, one should proceed with serum administration.

If there is no history of allergy and an intracutaneous test with 1:1,000 serum is positive, an ophthalmic test with 1:100 dilution should be made. If the latter is negative, serum 1:10 should be instilled into the conjunctiva. If both ophthalmic tests are negative, serum administration is probably safe but accelerated serum sickness may occur. If either ophthalmic test is positive, serum administration is contraindicated, theoretically.

If the patient is known to have allergic symptoms when near horses or a positive skin reaction to horse dander and if the intracutaneous test with 1:100 serum is negative, he should be tested with 1:100 and 1:10 conjunctivally. If the latter tests are negative, serum administration is probably safe.

If the patient is allergic to horse dander and the intracutaneous test with 1:100 serum is positive and the ophthalmic tests with 1:100 and 1:10 serum are negative, it is very questionable whether serum should be administered, if its administration is not a necessity.

If an individual is allergic to horse dander and both the intracutaneous and the ophthalmic tests with 1:100 serum are positive, the administration of horse serum is absolutely contraindicated unless death is almost certain to ensue without its use.

**Dose and Method of Administration.**—For non-allergic persons the rule applies to give the entire necessary dose of antiserum at the earliest possible moment by slow intramuscular injection; and, in critical conditions, intravenously. There is no known method of preventing ordinary serum sickness.

Those who by the history or the sensitivity test are found to be liable to serum sickness because of acquired allergy—those without a positive eye test—should be given “broken dosage,” i. e., the smallest dose of antiserum that is likely to do any good, and this should be repeated at intervals. It should be injected subcutane-

ously very slowly and into an extremity in such a way as to permit immediate stopping of absorption by means of a tourniquet (e. g., the cuff of a sphygmomanometer) in case early untoward manifestations appear. Additional doses of antiserum may then be given at intervals, provided these do not exceed five days, as a greater interval between serum injections is liable to produce or increase allergy.

The congenitally allergic individual, sensitive to horse serum and horse dander—history and/or both intracutaneous and ophthalmic tests positive—must not be given horse serum under any circumstances or in any way.

The recommendation of rapid desensitization by half hourly increasing doses of the serum is not fully justified. Any one who has seen how painstaking and slow is the method of producing merely a very partial “desensitization” or hyposensitization over a period of months cannot possibly conceive of a desensitization in a few hours sufficiently great to allow the administration of several cubic centimeters of serum. Such a dose of antigen constitutes an amount hundreds of times greater than the quantity safely reached with other antigens—such as pollen or horse dander—after several months of treatment. “Rapid desensitization” under these circumstances is practically impossible.

Immune serum from another species to which the patient is not allergic is the only way of securing the benefits of serum therapy for the congenitally allergic person. It is also the most desirable form for the one who has acquired horse serum allergy. Antiserum obtained from cattle may be suitable. Human immune serum has the great advantage of minimum liability to the production of allergic manifestations.

Avoidance of producing horse serum sensitization should also be mentioned under the heading of prophylaxis. Thus, while one should not delay the employment of diphtheria antitoxin in all cases reasonably suggestive of diphtheria, it is bad practice to give diphtheria antitoxin as a routine to every patient who has a sore throat. In immunization for the prevention of disease, horse serum injections should, as far as possible, be avoided.

#### TREATMENT

Whenever therapeutic serum is administered, Solution of Epinephrine should be at hand ready for instant use. At the first sign of any reaction, 1 cc. of it should be given intramuscularly. If the symptoms are extremely urgent 0.2 or 0.3 cc. should be given intravenously, well diluted and very slowly. The epinephrine may be repeated in a few minutes if necessary. In questionable cases, epinephrine may be injected even before the administration of serum.

It is to be remembered that no amount of epinephrine will prevent a reaction in a person who is naturally allergic to horse serum. However, one who has been so unfortunate as to obtain such a reaction should continue to give epinephrine at short intervals. If the patient has survived the first fifteen or twenty minutes of the reaction, his chances for recovery increase as the minutes elapse. It may be wise at that time to combat some of the effects of the shock by means of morphine hypodermically, by caffeine with sodium benzoate, by heat applied to the body, and by hot drinks.

Ephedrine sulfate by mouth has a more prolonged effect. It may be given in doses of 0.04 Gm. every two to four hours as required to maintain the relief obtained from epinephrine. When it fails, epinephrine injection should be repeated as required for comfort.

Calcium may be given by slow intravenous injection of 20 cc. of 10 per cent solution of calcium gluconate. The rate of injection should not exceed 0.5 cc. per minute. This may be supplemented by 10 cc. of 10 per cent solution of calcium gluconate given intramuscularly, and this injection may be repeated every twelve hours until the rash or other symptoms have subsided.

Acetylsalicylic acid (a 0.3 Gm. capsule every two to four hours as required) is often of help in allaying the itching. When the patient is unable to sleep on account of the pruritus, the addition of barbiturate to the ephedrine (which has a tendency to produce insomnia) is indicated. The three agents may be combined as in the accompanying prescription.

#### *Sedative Prescription*

R Ephedrine sulfate .....	0.50 Gm.
Phenobarbital .....	0.50 Gm.
Acetylsalicylic acid .....	5.00 Gm.
M. and div. into 15 capsules.	
Label: One every 2 to 4 hours as required.	

The therapy of urticaria (q. v.) may also be brought into requisition in obstinate cases.

For external use the employment of evaporating applications such as calamine lotion with 1 per cent phenol, diluted vinegar, hot sodium bicarbonate solution or diluted alcohol should not be neglected. If the eruption is generalized, the patient may be given a warm alkaline bath (a cup of baking soda to the tub), which should be followed by freely dusting the skin with talcum powder, to which menthol (0.25 per cent) may be added with advantage.

## Council on Foods

### ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COUNCIL ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

FRANKLIN C. BING, Secretary.

#### SEXTON BRAND TOMATOES, JUICE PACKED

*Manufacturer.*—John Sexton & Company, Chicago.

*Description.*—Canned whole peeled tomatoes, packed in juice.

*Manufacture.*—Tomatoes are washed, inspected, scalded, hand peeled, again inspected and hand packed in cans. Cans filled with tomato juice are exhausted, sealed and processed.

*Analysis* (submitted by manufacturer).—(Analysis of entire contents including liquid): moisture 93.9%, total solids 6.1%, ash 0.53%, fat (ether extract) 0.5%, protein (N  $\times$  6.25) 1.1%, crude fiber 0.30%, carbohydrates other than crude fiber (by difference) 3.9%.

*Calories.*—0.24 per gram; 7 per ounce.

*Claims of Manufacturer.*—Choice quality whole peeled tomatoes packed in juice without added sugar or salt. For use in special diets in which sugar or salt is proscribed or in quantitative diets of calculated composition.

#### CERTIFIED BRAND PURE VANILLA EXTRACT

*Manufacturer.*—Certified Extracts, Inc., New York.

*Description.*—Vanilla extract containing water, ethyl alcohol, cane sugar and extractive matter of Bourbon Vanilla Beans.

*Manufacture.*—Vanilla beans are chopped and percolated with 55 per cent alcohol for six days and nights. The percolate is drawn off. The beans are washed and are pressed to secure the remaining percolate, which is added to the first liquid.

Water is added to make a definite amount, sugar is dissolved in the extract and the mixture is aged in storage tanks, filtered and bottled.

*Analysis* (submitted by manufacturer).—(In terms of grams per hundred cubic centimeters).—Vanillin 0.29, resins 0.18, ash 0.30, acidity cc. N/10 per 100 cc., 50 cc., alcohol by volume 35 per cent and lead number (Winton) 0.64.

#### (a) DIADEM BRAND GOLDEN TABLE SYRUP

#### (b) DIADEM BRAND WHITE TABLE SYRUP

*Distributor.*—Schnull & Company, Indianapolis.

*Packer.*—The Torbitt & Castleman Company, Inc., Louisville, Ky.

*Description.*—(a) Table syrup; a blend of corn syrup and refiners' syrup—the same as Bob White Brand Fancy Table Syrup Golden (THE JOURNAL, Aug. 3, 1935, p. 369). (b) Table syrup; a blend of corn syrup and sucrose syrup, flavored with vanilla—the same as Bob White Brand Fancy Table Syrup Crystal White (THE JOURNAL, Oct. 19, 1935, p. 1271).

*Claims of Manufacturer.*—Recommended for use as an easily digestible and readily assimilable carbohydrate supplement to milk in infant feeding and as a syrup for cooking, baking and the table.

#### SEXTON BRAND BLUEBERRIES, JUICE PACKED

*Manufacturer.*—John Sexton & Company, Chicago.

*Description.*—Canned cooked blueberries, packed in juice.

*Manufacture.*—Blueberries are cleaned, mechanically sorted, inspected, cooked and automatically filled into cans. The cans are sealed and washed.

*Analysis* (submitted by manufacturer).—(Analysis of entire contents including liquid): moisture 88.9%, total solids 11.1%, ash 0.2%, fat (ether extract) 0.4%, protein (N  $\times$  6.25) 0.4%, crude fiber 1.1%, carbohydrates other than crude fiber (by difference) 9.0%.

*Calories.*—0.41 per gram; 12 per ounce.

*Claims of Manufacturer.*—For diets in which sweetened fruit is proscribed.

#### FORT HAMILTON BRAND HAWAIIAN PINE- APPLE—CRUSHED AND GEMS

*Distributor.*—E. H. Frechtling Company, Hamilton, Ohio.

*Packer.*—Hawaiian Pineapple Company, San Francisco.

*Description.*—Canned pineapple packed in concentrated pineapple juice with added sucrose. The same as Dole canned pineapple (THE JOURNAL, April 8, 1933, p. 1106).

#### JENNY LEE BRAND MACARONI RINGS AND

#### JENNY LEE BRAND ALPHABETS

*Manufacturer.*—Minnesota Macaroni Company, St. Paul.

*Description.*—Macaroni of various shapes prepared from durum semolina.

*Manufacture.*—The same as for Minnesota Brand macaroni products (THE JOURNAL, Aug. 3, 1935, p. 369).

#### TEXAS GIRL BRAND BAKING POWDER

*Manufacturer.*—The Snow King Baking Powder Company, Cincinnati.

*Description.*—Baking powder consisting of starch, sodium bicarbonate, sodium aluminum sulfate and calcium acid phosphate; the same as Snow King Double Action Baking Powder (THE JOURNAL, Oct. 13, 1934, p. 1151).

#### 18-K BRAND COFFEE

*Manufacturer.*—Winston and Newell Company, Minneapolis.

*Description.*—Roasted coffee; essentially the same as 18-K Brand Vacuum Packed Fresh Roasted Coffee (THE JOURNAL, June 30, 1934, p. 2187) except that it is the whole bean product and is not vacuum packed.

# THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, NOVEMBER 21, 1936

## HYPOGLYCEMIC SHOCK TREATMENT OF SCHIZOPHRENIA

Recently THE JOURNAL made available a report by Glueck<sup>1</sup> of his observations on a new treatment for schizophrenia. A report just released by the Board of Control for England and Wales, written by Dr. Isabel Wilson,<sup>2</sup> also concerns the present status of hypoglycemic shock treatment of schizophrenia. Present opinion, according to the report, indicates that this treatment should be employed primarily in early cases, but even cases of long duration sometimes show satisfactory results. The treatment consists in giving the patient a series of doses of insulin, as a result of which he falls into a state of hypoglycemia. The injections are continued at frequent intervals until the desired result is obtained. As a rule the first dose is from 15 to 30 units of insulin intramuscularly, given at 7 a. m. without previous ingestion of food. The amount is increased by 5 or 10 units daily until a dose is reached to which the patient reacts with what is known as "insulin shock." The most important symptoms of satisfactory shock are sweating, hunger, bradycardia, epileptiform attacks, low temperature, salivation, mental changes and coma. If it is desired to stop the shock before the patient has gone into coma, it may be readily interrupted by giving the patient from 150 to 200 Gm. of dextrose in tea or water. Dextrose may be administered also by nasal tube or by intravenous injection.

There were three deaths from treatment in Vienna among the first 104 cases, but apparently no further deaths have been recorded there or elsewhere. Other than a possible fatal accident, the effect on the heart, the pancreatic damage and the alterations of sugar metabolism are possibly the most important complications. Dr. Wilson believes that this method of treating schizophrenia is promising. The association between insulin treatment and clinical improvement is occasionally striking, but the degree of response to be expected cannot be prophesied on clinical grounds.

1. Glueck, Bernard: The Hypoglycemic State in the Treatment of Schizophrenia, J. A. M. A. 107:1029 (Sept. 26) 1936.  
2. Wilson, Isabel G. H.: A Study of Hypoglycaemic Shock Treatment in Schizophrenia, Board of Control, H. M. Stationery Office, 1936.

Survey of the various theoretical explanations advanced for the success of this treatment reveals no solid ground of physiologic or pathologic proof, and the real mechanism underlying the symptoms and changes that have been observed remains unknown. Thus, while agreement is still far off, Dr. Wilson believes that the treatment is neither too dangerous nor too unpleasant to exclude it as a means of treating the serious disorder known as schizophrenia. The report recommends, therefore, that hypoglycemic shock therapy should be begun in a public mental hospital in England or Wales, only, however, after careful study of the experiences already gained. Furthermore, treatment should be carried out in an "insulin ward"; one physician should be in charge of all treatment, careful records should be kept, control observations should be made, and treated cases should remain under close observation for several years.

Wortis<sup>3</sup> similarly has recently reviewed the subject. His conclusions differ little from those reported by Wilson, but he believes that the most likely theory explaining the results of insulin shock is that metabolism in the central nervous system is improved directly or indirectly by stimulation of carbohydrate consumption. In the seventy-five cases of schizophrenia reported by him, a total average of 63 per cent of the cases showed remission following treatment. In view of the frequency of spontaneous remissions in this disorder, these results are more suggestive than conclusive.

## FOOD POISONING

Significant bacterial contamination of foods falls into two groups: contamination with specific infectious bacteria such as the typhoid bacillus, and contamination with bacteria that may bring about deleterious changes in the food itself.

The contamination of foods with bacteria derived from human and from certain animal infections, such as tuberculosis and various septic processes, is a familiar public health problem. As regards raw milk, particularly, in which the possibilities of contamination are numerous and multiplication of many bacteria can readily occur, preventive measures, public and private, have long been considered necessary. The almost universal practice in the United States of pasteurizing milk has greatly reduced the food hazards of this type. The recent indorsement by the Certified Milk Producers Association of the pasteurization of certified milk emphasizes the sanitary value of the pasteurizing process. Greater cleanliness in the preparing and serving of raw foods has likewise diminished the danger of food-borne infection.

At present the possibility of bacterial contamination of food with specific pathogens is best dealt with by thorough cooking, by general measures of cleanliness,

3. Wortis, Joseph: On the Response of Schizophrenic Subjects to Hypoglycemic Insulin Shock, J. Nerv. & Ment. Dis. 84:497 (Nov.) 1936.

by careful avoidance of foods derived from sick or unsound animals, and possibly, in certain limited groups, by supervision of food handlers. Routine examination of all food handlers, although advocated by a few sanitarians, is a task of almost insuperable difficulty in the hotels and restaurants of large cities because of the frequent turnover of personnel; as regards the individual housewife or domestic servant, it is quite out of the question.

A well known instance of illness caused by swallowing harmful substances formed in foods by bacterial action is botulism. The high fatality of botulism (80 per cent or more) makes this disease justly dreaded in spite of its relative rarity. The botulism bacilli are widely distributed in soil and grow readily in a variety of foodstuffs under anaerobic conditions such as exist in foods preserved by heat and some other methods. Processes for the destruction of the bacteria of botulism were accurately worked out by commercial canning organizations in the United States about ten years ago, and their general application by the canning industry has been followed by immediate practical success.

Since 1925 there has been no instance of botulism traced to the use of food commercially canned in the United States, although there have been two recent outbreaks of botulism caused by commercially canned food imported from other countries, one from imported canned Italian onions,<sup>1</sup> one from imported canned German sprats.

The chief danger from botulism in this country at present appears to lie in the use of locally grown and home canned foods. Although many attempts have been made by the United States Department of Agriculture and other agencies to foster the use of suitable home canning methods, outbreaks of botulism traceable to the use of imperfectly sterilized home canned foods continue to occur. In 1935 there were twenty-three such outbreaks, with sixty-nine cases and forty-two deaths. K. F. Meyer<sup>2</sup> has succinctly expressed the situation: "Until every farmer's wife has been taught that all vegetables or other nonacid foods home canned by the boiling water or oven process must be thoroughly boiled<sup>3</sup> before they are served, botulism intoxication may be anticipated."

Another type of food poisoning caused by the presence in foods of the products of bacterial action has come to light in recent years.<sup>4</sup> It has been established that certain common bacteria, when given an opportunity of growing in foods under suitable conditions, generate a toxic substance that may cause violent gastro-intestinal symptoms. It has, for example, been definitely shown that staphylococci<sup>5</sup> are able to produce a substance that is poisonous when swallowed

by man and by the monkey. This type of food poisoning has been most commonly observed in hot weather in connection with the use of cream-filled pastries. Several outbreaks have been traced to cream pies, chocolate éclairs and similar pastries, the number of victims in a particular outbreak sometimes mounting into the hundreds. Although the symptoms produced by this toxic substance are sometimes severe, the attacks are rarely, if ever, fatal. Cleanliness of the ingredients and proper attention to the sanitation of the environment and of the personnel engaged in manufacture constitute an important safeguard against this form of food poisoning, since heavy initial seeding is doubtless one of the factors leading to abundant production of the toxic substance. Prompt and constant refrigeration is also an important aid in preventing bacterial multiplication. In some localities official restrictions have been placed on the sale of cream-filled bakery goods in hot weather.

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## Current Comment

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### SELLING SAMPLES

One of the smallest performances of certain tradesmen is the purchase from physicians for resale of the samples sent to them by manufacturers of proprietary medicines. In some of our large cities panhandlers float from office to office, begging such medicines from secretaries, office attendants and others to whom the physician may occasionally turn over such materials for disposal. It would seem almost to be taken for granted that the doctor will keep samples of drugs of established merit and that the materials that drop into the hands of the panhandlers are usually new preparations of which the doctor has no knowledge, or proprietary medicines of little or no established usefulness. Nevertheless the practice seems to yield a few shekels, because it perennially appears on the troubled surface of medical waters. The most recent incident concerns an attempt to develop this business in Florida. Florida physicians received postal cards labeled Riverside Specialty Company, offering to purchase samples sent to them by manufacturing houses. An investigation reveals that the Riverside Specialty Company is really Mr. Leo Weinstein, a New York pharmacist, who recently moved to Florida. On inquiry he stated that about the first of September he mailed to 150 physicians in Jacksonville a form letter offering to purchase samples of drugs. After two months passed, during which time he says he did not receive a single reply, he decided to give up the idea and the Riverside Specialty Company went out of business. Mr. Weinstein says that he is again in the pharmacy business. To the physicians of Jacksonville, as Walter Winchell would say, orchids for the quality of their ideals and of their ethics. To panhandling pharmacists who pinch pennies by peddling sample pills, a fragrant bunch of scallions!!! Lest you do not comprehend, a scallion is an onion which fails to bulb but forms a long neck like a leek.

1. Koser, S. A., and Reiter, D. O.: *J. Prev. Med.* 2: 499 (Nov.) 1929.

2. Meyer, K. F.: *California & West. Med.* 44: 385 (May) 1936.

3. Fortunately the botulinus toxin is destroyed by boiling.

4. Jordan, E. O., and Burrows, William: *Proc. Soc. Exper. Biol. & Med.* 30: 448 (Jan.) 1933.

5. Jordan, E. O., and Burrows, William: *Am. J. Hyg.* 20: 604 (Nov.) 1934.

## TYPHOID IN THE CCC

The Civilian Conservation Corps, now in existence more than three years, has enrolled about 1,400,000 men. They have been scattered throughout the United States in several thousand camps largely in rural areas. While the water for these camps was carefully examined and guarded there were nevertheless abundant opportunities for the drinking of polluted water when the men were leaving camp on pass or on work parties on locations some distance away from the camp water supply. When enrolled, the men were examined physically by U. S. Army medical officers and all of them were given the regular army typhoid vaccine. Lieut. Col. George F. Lull<sup>1</sup> of the medical corps has summarized for the three years the number of cases of typhoid that developed and has pointed out the relation of these cases to the time of completion of the typhoid prophylaxis. In a total enrolment of almost a million and a half men up to the first of this year, there had developed only 237 cases of typhoid, thirty-three of which developed before the inoculations with typhoid vaccine were complete. These thirty-three men therefore had probably been infected before coming to camp. Since all these men had been vaccinated against typhoid, it is interesting to note the similarity of the morbidity rate, the mortality rate per thousand, and the case fatality rate for the three years. The morbidity rate per thousand was 0.32 in 1933, 0.27 in 1934 and 0.26 in 1935. The mortality rate per thousand was 0.02 in 1932 and exactly the same in 1934 and 1935. The case fatality rate was 7.59 per cent for 1933, 7.69 for 1934 and 7.61 for 1935. When these men enrolled in the Civilian Conservation Corps, army officers supervised their clothing, their food and their vaccinations and remained with them in camp, being in charge of practically all their activities except their actual work, which was performed under the direction of experienced woodsmen and foresters. The medical department of the army justly may feel proud of the successful results of their prophylaxis of typhoid in the Civilian Conservation Corps.

## MEASURING SKIN PERMEABILITY

Skin permeability presents several problems of far reaching medical importance. Burgi<sup>1</sup> has recently devised a simple but ingenious method of measuring the permeability of the skin to gaseous substances. His apparatus consists primarily of a glass bell jar to which are attached two glass tubes by means of which volatile substances can be passed through one and out of the other and the loss of gas recorded. This method eliminates the possibility of inhalation of gases and also the necessity for measuring either the accumulation of substances in the blood or their elimination through the urine. It is necessary to apply the glass hemisphere closely to the skin and to seal the contact with petrolatum, wax or gelatin. He found that the absorption of carbon dioxide increases with the concentration of the gas in the apparatus. The results were similar with hydrogen sulfide except that concentrations of more than 0.2 per cent were likely to produce an inflamma-

tory reaction in the skin, which in turn diminishes its permeability. Ammonia penetrated the skin almost as easily as carbon dioxide, but carbon monoxide did not penetrate at all. Sodium or calcium chloride penetrated the skin only with difficulty, and a 10 to 27 per cent solution of sodium chloride was necessary before penetration could occur at all. A group of more toxic substances was tested on the skin of rabbits. It was found impossible to produce chloroform anesthesia in these animals by passing chloroform next to the shaved skin. When tetrachlorethane was used, however, total anesthesia could be produced in from twenty to twenty-five minutes. The author's experiments convinced him that only those narcotic liquids that have a boiling point of more than 80 C. can be made to penetrate the skin in sufficient quantity to produce anesthesia or death in the rabbit. His experiments with the permeability of the skin to mercury were also interesting. Pure mercury in the form of gray mercurial ointment penetrated more easily than mercury ( $\text{HgClNH}_2$ ) in the form of ammoniated mercury (white precipitate). Furthermore, mercury bichloride in a 1:1,000 solution penetrated little and in a 1:100 solution not at all.

## HISTIDINE TREATMENT OF PEPTIC ULCER

The use of histidine in the treatment of peptic ulcer is of much current interest. Recently Feldheim<sup>1</sup> reported a comparative study of histidine in the treatment of thirty-two patients with ulcer, six involving the stomach and twenty-six the duodenum. Seven of the patients disappeared during the course of their treatment. In one series consisting of eighteen patients, five of whom had ulcer of the stomach and thirteen ulcer of the duodenum, no treatment (except for limitation of spices) other than histidine was given. The second group consisted of fourteen patients, one with ulcer of the stomach and thirteen with ulcer of the duodenum. Of these, four disappeared. The latter group received the conventional treatment for ulcer, including diet, atropine, alkalis and, in addition, histidine. To each of the patients of both groups a series of twenty intramuscular injections of 4 per cent solution of histidine was given. Each patient thus received 5 cc. every day. After the treatment had been instituted for three or four days, practically all the patients became free from pain, in spite of a usual history of prolonged and intense pain for many months. Of the fifteen patients in the first group who were examined by x-rays forty days after the completion of the course of injections, four showed some improvement in the x-ray appearance of the lesion but eleven showed no change whatever. Of the ten patients in the second group similarly examined, five derived definite benefit from the combined treatment and five showed no change. It was Feldheim's conclusion that, although histidine alone may be extremely effective in relieving the pain of ulcer, it has little ability to cure the underlying process. Combined with more conventional methods of treatment, however, histidine may be regarded as a useful adjunct even though no accurate knowledge exists concerning its mode of action in relieving pain.

1. Lull, G. F.: Typhoid in the CCC, *Mil. Surgeon* 79:45 (July) 1936.

1. Burgi, Emile: La perméabilité de la peau aux médicaments et poisons, *Bruxelles-méd.* 16:1481 (Aug. 2) 1936.

1. Feldheim, E.: L'histidine dans la thérapeutique des ulcères gastroduodénaux, *Presse méd.* 44:1189 (July 22) 1936.

## Association News

### RADIO BROADCASTS

The American Medical Association and the National Broadcasting Company are presenting the second series of dramatized health broadcasts under the title *Your Health*. The first broadcast in the new series, the thirty-second dramatized cooperative broadcast under the title *Your Health*, was given October 13. The theme for 1936-1937 differs slightly from the topic in the first series, which was "medical emergencies and how they are met." The new series is built around the central idea that "100,000 American physicians in great cities and tiny villages, who are members of the American Medical Association and of county and state medical societies, stand ready, day and night, to serve American people in sickness and in health."

The program will go out on the Blue network instead of the Red, as originally announced. The announcement cards that were sent out when the program was planned for the Red network can be changed simply by substituting the word "Blue" for "Red" where it occurs.

The topics are announced monthly in advance in *Hygeia*, the Health Magazine, and three weeks in advance in each issue of *THE JOURNAL*. The topics and speakers for the next three programs are:

November 24. Be Thankful. W. W. Bauer, M.D.

December 1. "Smog." W. W. Bauer, M.D.

December 8. Heredity and Disease. Morris Fishbein, M.D.

The time of the broadcast is Tuesday afternoon at 4 o'clock central standard time (5 o'clock eastern time, 3 o'clock mountain time, 2 o'clock Pacific time).

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

### ARIZONA

**The Healthmobile.**—The Arizona State Board of Health recently inaugurated a mobile tuberculosis service. The healthmobile was purchased with funds given by the Arizona "Forty and Eight," the American Legion and the U. S. Children's Bureau.

### ARKANSAS

**Society News.**—The Benton County Medical Society was addressed at Rogers recently, among others, by Dr. Raymond T. Smith, Fort Smith, on "Upper Respiratory Affections in Relation to Chronic Pulmonary Disorders."—At a meeting of the Johnson County Medical Society, October 22, the speakers were Drs. Sidney J. Wolfermann, Fort Smith, on "Arrhenomablastoma of the Ovary," and Ralph Bowen, Oklahoma City, "Recent Advances in Allergy."

### CALIFORNIA

**Society News.**—At a meeting of the Alameda County Medical Association in Oakland, November 16, Drs. Lester B. Lawrence and Robert A. Glenn discussed "Spontaneous Subarachnoid Hemorrhage" and "Multiple Primary Carcinomas" respectively.—Drs. Burrell O. Raulston and Clarence J. Berne, Los Angeles, discussed hyperthyroidism before the San Diego County Medical Society, November 10.

**Plague Infection in Fleas.**—According to *Public Health Reports*, plague infection has been proved by guinea-pig inoculation in fleas collected from ground squirrels (*Citellus beecheyi*) in the San Ardos area of Monterey County and from pooled fleas taken from chipmunks (genus *Eutamias*) and ground squirrels (*Citellus beecheyi* and genus *Callospermophilus*) in the Lake Tahoe region. A human case of plague was reported from Monterey County in June of this year, but this is the first evidence of plague in ground squirrels in this county since 1931. The fleas collected near Lake Tahoe were from the region where a human case of plague occurred in July of this year.

**Survey of Relief Cases.**—The Central Medical Bureau of San Francisco and the University of California Medical School collaborated in a survey of 1,000 relief cases to determine why the emergency relief load in the state continues a major problem. The survey revealed that 26.7 per cent of the work relief subjects examined were found physically sound, while 6.5 per cent were found to be unemployable because of disease. For the purpose of the survey the relief subjects were divided into four classifications: The A group embraces the physically sound, the B group the physically frail but organically sound, the C group the ones with demonstrable organic lesions not producing symptoms, while the D group included those with demonstrable lesions which would interfere with normal activities. A percentage of 36.5 was recorded for the persons in the C classification, indicating this group to be in a measure responsible for the persistence of the present relief load, it was stated.

### COLORADO

**Society News.**—Dr. William T. H. Baker, Pueblo, addressed the Arapahoe County Medical Society, meeting with its woman's auxiliary, October 26, on "The Business Side of Medicine."—The Arkansas Valley Medical Association was addressed at Salida, October 24, by Drs. Benjamin E. Konwaler, Pueblo, on "Nontuberculous Diseases of the Lungs"; Kenneth B. Castleton, Salt Lake City, "Surgical Aspects of Carcinoma of the Colon," and Emeric I. Dobos, Denver, "Interpretation of Electrocardiograms."—Among others, Dr. Arthur J. Markley, Denver, addressed the Boulder County Medical Society, October 15, on syphilis control. At a special meeting of the Chaffee County Medical Society in Salida, October 8, Dr. Markley also discussed syphilis and Dr. William T. H. Baker, Pueblo, "The Business Side of Medical Practice."—Dr. Vera H. Jones, Denver, discussed the crippled children's program before a special meeting of the Eastern Colorado Medical Society recently.—The Medical Society of the City and County of Denver was addressed November 3 by Drs. Robert W. Gordon on "Gastro-Intestinal Symptoms of Urinary Tract Disorders"; Gerrit Heusinkveld, obstetrics, and Harry H. Wear, "Use of Mandelic Acid in Urinary Infections."—Dr. Raynor E. Holmes Sr., Canon City, discussed "Herniotomy as Complicated by Latent Gonorrheal Infection" before the Fremont County Medical Society, October 26, in Canon City.—At a meeting of the Pueblo County Medical Society in Pueblo, November 3, Dr. Frederick M. Heller spoke on "Recent Advances in Infectious Diseases."

### CONNECTICUT

**Health Officers Appointed.**—Dr. Thomas C. Hodgson has been named health officer of Berlin to fill the unexpired term of Dr. Matthew H. Griswold, and Dr. Harold T. Oesau has been named acting health officer of the town of Stratford, succeeding the late Dr. DeRuyter Howland. Dr. Frank M. Dunn, New London, has been appointed health officer of Waterford to succeed the late Dr. Ross E. Black.

**New Director of Mental Hygiene.**—Dr. George K. Pratt, since 1930 medical director of the mental hygiene committee of the New York State Charities Aid Association, has been appointed to a similar position with the Connecticut Society for Mental Hygiene. He succeeds Dr. Edgar Van Norman Emery, who has been appointed professor of social psychiatry at Washington University School of Medicine, St. Louis. Dr. Pratt graduated from the Detroit College of Medicine and Surgery in 1915. He was the medical director of the Massachusetts Society for Mental Hygiene from 1921 to 1925 and is the author of several books on his specialty.

### DISTRICT OF COLUMBIA

**Personal.**—Dr. Arthur C. Christie, Washington, D. C., will deliver the Silvanus Thompson Lecture before the British Institute of Radiology at its annual congress in Westminster, December 2.—Dr. Jefferson R. Kean, brigadier general, retired, U. S. Army, and founder of Cuba's sanitation department in 1899, was awarded the grand cross of the Order of Carlos Finlay, the highest official honor in Cuba in the medical field.

### GEORGIA

**Officers of State Board.**—Dr. Jesse L. Howell, Atlanta, was elected president of the Georgia State Board of Medical Examiners at a meeting, October 13-14, and Dr. Donald T. Rankin, Alto, vice president. Dr. Miller T. Harrison, Atlanta, is secretary of the board.

**Personal.**—Dr. Warren Bond Matthews, formerly instructor in pathology, Northwestern University School of Medicine, Chicago, has been appointed associate professor of pathology at Emory University School of Medicine, Atlanta, succeeding Dr. Jack C. Norris, who resigned to engage in the private practice of medicine. Dr. Norris will continue to give the course in public health.

## ILLINOIS

**Antirabies Serum on State Free List.**—Antirabies serum will hereafter be distributed without charge to all persons in need of it, the Chicago Tribune reported November 14. Certificates of poverty will no longer be required, it was stated, because the state department of health has placed the serum on the state's free list.

**Conference of Health Officers.**—The Conference of Illinois Health Officers and Public Health Nurses will be held at the Auditorium, Springfield, December 8-9. The program will include the following speakers:

Dr. Edward G. Huber, instructor in preventive medicine and hygiene, Harvard School of Public Health, Boston, Administrative Functions of a Health Officer.

Philip Jay, D.D.S., University of Michigan School of Dentistry, Ann Arbor, Dental Caries, A Public Health Problem.

Dr. Kenneth F. Maxcy, director, School of Public Health, University of Minnesota, Minneapolis, Administrative Problems in Contagious Disease Control.

Elmer V. McCollum, Ph.D., professor of biochemistry, Johns Hopkins University School of Hygiene and Public Health, Baltimore, Diet in Resistance to Disease.

Dr. Raymond A. Vonderlehr, assistant surgeon general, U. S. Public Health Service, Washington, The Problem of Syphilis Control.

Dr. Reginald M. Atwater, executive secretary, American Public Health Association, New York, What Next?

At a luncheon for health officers Wednesday, special public health problems in Illinois will be discussed by Dr. Lloyd L. Arnold, professor of bacteriology and public health, University of Illinois College of Medicine, Chicago; Dr. Winston H. Tucker, Springfield, coordinating epidemiologist, state department of public health; Dr. Milton H. Kronenberg, Chicago, medical director, division of industrial hygiene, state department of public health, and W. H. Haskell, milk sanitarian, U. S. Public Health Service.

## Chicago

**Symposium on Mental Hygiene.**—A public symposium on mental hygiene and the environment was held at the Hotel Bismarck, November 18, by the Illinois Society for Mental Hygiene, with the following speakers:

W. Lloyd Warner, A.E., assistant professor of anthropology and sociology, University of Chicago, Social Anthropology.

Clifford R. Shaw, M.A., director, department of sociology, Institute for Juvenile Research, Sociology.

Dr. Franz Alexander, director, Institute for Psychoanalysis, Psychoanalysis.

Dr. H. Douglas Singer, director, University of Illinois Psychiatric Institute, Social Psychiatry.

**Society News.**—The Chicago Pediatric Society was addressed November 17 by Drs. Katsuji Kato, Chicago, and Robert Blessing, Evanston, Ill., on "Sternal Marrow Puncture in Infants and Children" and "The Incidence of Breast Feeding in Private Practice in a Suburban Metropolitan Area"; these were inaugural theses.—Among others, Dr. Theodora Wheeler discussed "Carbohydrate Metabolism and the Convulsive Threshold" before the Chicago Neurological Society, November 19.—At a meeting of the McDonagh Society for Clinical Research, November 20, Dr. Florimond J. Leblanc spoke on "Pneumonia, Pulmonary Thrombosis and Pulmonary Edema."—The Chicago Society of Industrial Medicine and Surgery was addressed, November 23, by Drs. James J. Callahan on "Fractures Around the Elbow Joint" and Edwin M. Miller, "Fractures Around the Elbow Joint in Children."

## INDIANA

**Society News.**—The Hendricks County Medical Society was addressed in Danville, October 22, by Drs. Oscar T. Scamahorn, Pittsboro, and Marjorie G. E. Morrison, Danville, on "Septic Disease of Knee Joint and Medical History."—Dr. Penn-Gaskell Skillern, South Bend, discussed problems in surgical diagnosis and treatment before the St. Joseph County Medical Society, October 25.—At a meeting of the Jasper-Newton County Medical Society in Rensselaer, October 29, Dr. Roy R. Grinker, Chicago, spoke on infection of the central nervous system.—Dr. Parvin M. Davis discussed injuries to the spine and their treatment before the Floyd County Medical Society in New Albany, October 9.—Dr. Frank H. Jett,

Terre Haute, addressed the Gibson County Medical Society in Princeton, October 12, on industrial surgery.—Dr. John R. Brayton, Indianapolis, addressed the Lawrence County Medical Society, October 14, on "Differential Diagnosis of Syphilis and Other Common Skin Diseases."—Dr. A. Jerome Sparks will discuss "The Management of Urinary Calculi" before the Fort Wayne Medical Society, December 1; Dr. Walter C. Alvarez, Rochester, Minn., addressed the society, November 10, on "Helpful Hints in Diagnosing Puzzling Types of Indigestion."—At a meeting of the Academy of Medicine and Surgery in Fort Wayne, November 17, Dr. Metodi Velkoff spoke on blood counts.—The Indiana Pediatric Society met in Fort Wayne, November 6-7. Dr. Paul L. Schroeder, Chicago, discussed "Delinquency in Children," and John H. Muyskens, Sc.D., Ann Arbor, Mich., "Fractional Speech."—At the Indiana State Conference on Social Work in Indianapolis, November 30-December 1, Dr. Oscar B. Markey, Cleveland, among others, will speak on "Problems of the Adolescent."

## IOWA

**Personal.**—Dr. John H. Peck, Des Moines, has been appointed superintendent of the State Sanatorium for Tuberculosis, Oakdale, succeeding the late Dr. James A. Edwards.—Dr. William O. Purdy, Des Moines, has been appointed assistant medical director of the Equitable Life Insurance Company of Iowa.

**Lectures on First Aid.**—Lectures and demonstrations on first aid, as outlined in the Red Cross course of instruction, were given by members of the Shelby County Medical Society during September and October. The meetings were held each Wednesday evening and were open to the public, the only cost for the course being 60 cents for the purchase of a textbook. The subjects discussed were physiology and bandaging, shocks and wounds and their treatment, artificial respiration and its uses, burns and scalds and their treatment, effects of heat and cold and treatment, fractures, poisons, unconsciousness and treatment of common emergencies, and transportation of the sick and injured.

**Second Annual Diphtheria Drive.**—The second annual campaign to eradicate diphtheria from Polk County was recently launched by the Des Moines Academy of Medicine and the Polk County Medical Society in cooperation with the city health department, the public health nursing association and the school nursing bureau. The goal in this campaign is to immunize two thirds of the 3,000 infants born in the county every year. To this end a number of physicians agreed to inoculate for one dollar every child between the ages of 6 months and 2 years who is brought to their offices Saturday mornings from 11 to 12 o'clock on October 31, November 7, 14, 21 and 28, the state journal announces. Pamphlets on the early immunization of children in the preschool age group have been circulated among the parents. The journal points out that 599 cases of diphtheria were reported in Iowa during 1935, while 287 were recorded from January through October of this year. In 1935 the number of deaths from this cause was fifty-six, while sixteen were recorded from January through August of this year. The immunization of children against diphtheria is a feature of Iowa's program under social security activities. The work, under the direction of the state department of health, has been completed in seventeen counties with a total of 6,989 children immunized. In Audubon, Crawford, Hancock, Harrison, Winnebago and Woodbury counties, where the work is nearing completion, 2,930 children have been immunized.

## KENTUCKY

**District Meeting.**—The Fifth District Medical Society will meet in Louisville, November 24, with the following speakers: Drs. Edward K. Martin, Frankfort, on "Extra-Uterine Pregnancy"; Philip F. Barbour, Louisville, "Acute Appendicitis in Children"; Frederick G. Speidel, Louisville, "Coronary Occlusion," and James Duffy Hancock, Louisville, "Diagnosis and Management of Acute Gallbladder Disease."

**Society News.**—Drs. Esie Asbury, Cincinnati, and Francis M. Massie, Lexington, addressed the Licking Valley Medical Association in Cynthia in September on sciatica and surgical shock, respectively.—At a meeting of the Jefferson County Medical Society, Louisville, November 16, the speakers were Drs. Richard Douglas Sanders, on "Cyclopropane Anesthesia"; Pat R. Imes, "Recent Advances in the Treatment of Varicose Veins and Leg Ulcers," and Robert F. Monroe, "Seasonal Variation in the Incidence of Puerperal Infection."—Hamp-

den C. Lawson, Ph.D., assistant professor of physiology, University of Louisville School of Medicine, addressed the Louisville Obstetrical and Gynecological Society, November 23, on "Physiology of the Endocrine Glands."

### MARYLAND

**Fund for the Study of Infantile Paralysis.**—About \$350,000 will be given to Johns Hopkins University School of Medicine, Baltimore, to be used in seeking a cure for infantile paralysis, under the will of the late Mrs. M. B. Graham, Washington, D. C.

### MASSACHUSETTS

**Special Service for Physicians.**—A special service for physicians and medical students was held in the Cathedral Church of St. Paul, Boston, October 18. Dr. John M. T. Finney, professor emeritus of surgery, Johns Hopkins University School of Medicine, Baltimore, the principal speaker, spoke on "Religion in Medicine."

**Dr. Fitz Appointed Lecturer in History of Medicine at Harvard.**—Dr. Reginald Fitz, Wade professor of medicine, Boston University School of Medicine, and director of Evans Memorial Hospital, has been appointed lecturer in the history of medicine at Harvard University Medical School for three years. Dr. Fitz, who is university marshal at Harvard, resigned in 1935 as associate professor of medicine at the medical school to go to Boston University.

**Scholarships at Harvard.**—Prize scholarships have been made available in the Harvard University Medical School, Boston, through gifts made recently by Mr. Edward S. Harkness and Dr. Daniel F. Jones. One or two will be awarded to persons entering the freshman class in 1937. Since the scholarships will be open to all students whatever their financial circumstances, the stipend will vary from \$100 to \$1,000, depending on the financial resources of the recipient. Holders of the scholarships who maintain, during their first year, a high honor record will continue to hold them throughout the medical school course.

**Personal.**—Dr. John J. Poutas, Newton, assistant director of communicable diseases in the state department of health since 1934, has been appointed health officer for the Connecticut River Valley District to succeed the late Dr. Harold E. Miner, Holyoke. The gold medal of the American Roentgen Ray Society for the outstanding exhibit at its annual meeting was awarded to Drs. Aubrey O. Hampton and Jacob Maurice Robinson, Boston. Their exhibit was entitled "The Iodized Oil Demonstration of Rupture of the Intervertebral Disk into the Spinal Canal with Special Reference to Unilateral Lumbar Lesions Accompanied by Low Back Pain with Sciatic Radiation."

**Medical Historical Pageant.**—The Boston Medical History Club presented a medical historical pageant at the Boston Medical Library, November 16. The characters of the following were portrayed by students of Tufts College Medical School:

Founding of Medical Schools  
John Morgan, 1735-1789.  
Benjamin Rush, 1745-1813.  
Daniel Drake, 1785-1852.

Surgery  
Philip Syng Physick, 1768-1837.  
Valentine Mott, 1785-1865.  
Joseph O'Dwyer, 1841-1898.

Experimental Medicine  
William Beaumont, 1785-1853.  
Alexis St. Martin.

The New Humanity  
Marie Elizabeth Zakrzewska,  
1829-1902.  
Linda Richards, 1840-1911.

Preventive Medicine  
Walter Reed, 1851-1902.  
William Crawford Gorgas, 1854-1920.

### MICHIGAN

**Highland Park Physicians' Club.**—The eleventh annual clinic of the Highland Park Physicians' Club will be held at the Highland Park General Hospital, December 2. The following program will be presented:

Dr. James E. Davis, Detroit, Malignant Lesions of the Cervix Uteri.  
Dr. Arthur J. Bedell, Albany, N. Y., General Vascular Lesions as Seen in the Fundus.  
Dr. Frederick F. Tisdall, Toronto, Ont., Canada, The Mineral and Vitamin Requirements of the Child.  
Dr. Charles Anderson Aldrich, Winnetka, Ill., Clinical Observations on Grip.  
Dr. Louis J. Harris, Toronto, Indications for Cesarean Section.  
Dr. Herman L. Kretschmer, Chicago, Treatment of Bladder Neck Obstruction by Transurethral Resection.  
Dr. Dean D. Lewis, Baltimore, Acute Pancreatitis.  
Dr. George W. Crile, Cleveland, The Thyroid Gland.  
Dr. George M. Curtis, Columbus, Iodine as Related to Thyroid Disease.

Joseph M. Hackett, mayor of Highland Park, will give the address of welcome at the banquet in the evening at the Book Cadillac Hotel and Dr. Crile will discuss his recent African expedition.

**Society News.**—The first annual banquet of the Grand Rapids Society for the Hard of Hearing, October 27, celebrating National Hearing Week, was addressed, among others, by Dr. Austin A. Hayden, Chicago, on "The Conservation of Hearing." A motion picture entitled "The Social Agencies of the Grand Rapids Community Chest" was shown.—Dr. Clyde K. Hasley, Detroit, discussed "Treatment of Malignancies of the Skin and Mucous Membranes" before the Calhoun County Medical Society in Battle Creek, November 3.—Dr. George M. Curtis, Columbus, Ohio, addressed the Academy of Surgery of Detroit, November 12, on "Experimental Studies—Stomach Motility as Related to Gastro-Intestinal Diseases."—Dr. Frederick B. Burke, Detroit, addressed the Ionia-Montcalm Counties Medical Society at Ionia, October 13, on the basic science law.—At a meeting of the Detroit Pediatric Society, November 4, Dr. Louis H. Newburgh, Ann Arbor, spoke on "The Overweight Child."—Dr. John A. Hookey, Detroit, discussed "Treatment of Eczema" before the Lenawee County Medical Society, October 20.

**Public Health Meeting.**—The sixteenth annual Michigan Public Health Conference was held in Lansing, November 11-13, with Dr. Clyde C. Slemons, state health commissioner, presiding. The following program was presented:

Dr. Thomas Parran, surgeon general, U. S. Public Health Service, Washington, D. C., Syphilis as a Public Health Problem.

Dr. Clara M. Davis, Winnetka, Ill., Science and Common Sense in the Feeding of Children.

Dr. James D. Bruce, Ann Arbor, The Michigan Program for Professional and Public Health Education.

Dr. Carl V. Weller, Ann Arbor, Cancer.

Lon W. Morrey, D.D.S., director, bureau of public relations, American Dental Association, Chicago, Mouth Hygiene.

Leslie C. Frank, sanitary engineer in charge, office of milk investigations, U. S. Public Health Service, Washington, D. C., Milk Control.

Dr. Carey P. McCord, director, bureau of industrial hygiene, Detroit Department of Health, Industrial Hygiene.

One evening session was addressed by Dr. Parran on "Future Trends in Public Health" and another by Joseph R. Hayden, Ph.D., professor of political science, University of Michigan, "The Philippines in Transition." The meeting concluded with a symposium on communicable disease Friday morning.

### MINNESOTA

**Outbreak of Diphtheria.**—Twenty-nine cases of diphtheria with five deaths were reported in an outbreak in Minneapolis between October 1 and October 25, according to the newspapers. Only about 15 per cent of the city's school children were immunized against the disease at the time of this report, but plans were being made to launch an antidiphtheria campaign.

**Society News.**—Dr. Theodore Diller, Pittsburgh, gave a lecture at the Mayo Clinic, Rochester, October 22, on "Human Credulity as Illustrated by Witchcraft."—The Stearns-Benton Counties Medical Society was addressed, October 22, among others, by Drs. Alfred W. Adson, Rochester, diagnosis and treatment of trigeminal neuralgia, and Charles E. Wright, of the American Medical Association; Trustee of the Association.

**Public Health Meeting.**—At the annual dinner of the Minnesota Public Health Association in Minneapolis, November 13, Dr. Horton R. Casparis, professor of pediatrics, Vanderbilt University School of Medicine, Nashville, was the guest speaker. Dr. Charles H. Mayo, Rochester, president of the association, was toastmaster. Other speakers included Dr. Caroline Hedger, Elizabeth McCormick Memorial Fund, Chicago, and Miss Frances Brophy, New York, field adviser of the National Tuberculosis Association. A Christmas Seal institute opened the all day session, marking the thirtieth anniversary of the introduction of the seal into the United States. Dr. Olaf J. Hagen, Moorhead, was elected president.

**Ex-Convict Shokunbi Given Suspended Sentence.**—Samuel P. Shokunbi, alias Samuel Kojoe Pearse, pleaded guilty, October 8, to practicing healing without a basic science certificate and was sentenced to sixty days in the St. Paul Workhouse; the sentence was suspended and he was placed on probation for one year. Shokunbi specialized in the sale of an Herb Tonic, a Gall Stone Remover and a Female Regulator, at prices varying from \$2 to \$5 per bottle. The defendant was arrested in May 1927 at St. Louis on a suspicion of robbery, and in July 1927 he was sentenced under the name of Samuel Kojoe Pearse to four years at hard labor in the penitentiary at Leavenworth. This sentence was imposed in the U. S. District Court at St. Louis, for using the mails to defraud in connection with the sale of medicine. He served twenty-seven months at Leavenworth and was released.

## MISSISSIPPI

**Society News.**—At a meeting of the Delta Medical Society in Belzoni, October 14, the speakers included Drs. Bernard H. Booth of Drew, on "The Common Cold and Its Treatment," and Henry King Wade, Hot Springs National Park, Ark., "Gonorrheal Epididymitis and Its Treatment."—The November meeting of the Central Medical Society will be addressed by Drs. Laurance J. Clark, Vicksburg, on pneumonia, and George W. F. Rembert, Jackson, coronary thrombosis.

## NEW YORK

**Personal.**—Dr. Frank Reynolds, Syracuse, was honored at a testimonial dinner October 15 on his retirement from the staff of the Crouse-Irving Hospital, with which he has been associated since its founding in 1912.—Dr. Samuel W. Hamilton, White Plains, assistant medical director of the New York Hospital, Westchester Division, has resigned to become director of a hospital survey for the National Committee for Mental Hygiene. Dr. James H. Wall, a member of the hospital staff since 1928, has succeeded Dr. Hamilton.

**Cancer Crusade Week.**—The governor proclaimed the week of November 1-7 as Cancer Crusade Week. The proclamation directed attention to the 18,000 deaths from cancer annually in New York and urged cooperation of all agencies to encourage early diagnosis and treatment. A cancer committee pointed out that New York has been a pioneer in the fight against cancer, having had the first special cancer hospital in the United States, the first free home for incurable cancer patients, the first state cancer institute, the first municipal cancer hospital, the first self-supporting cancer educational committees, the first rural diagnostic and treatment cancer clinic, the first national cancer fighting organization, the first international conference on cancer control, at Lake Mohonk in 1926, and publication of the first medical journal devoted to all aspects of the disease.

**Society News.**—Dr. Frederick S. Wetherell, Syracuse, addressed the Otsego County Medical Society, October 14, in Cooperstown, on "Surgery of the Sympathetic System as Related to the Problems of General Practice."—Dr. Israel S. Wechsler, New York, addressed the Medical Society of the County of Rockland at Letchworth Village, Thiells, October 14, on "Neuritis: Etiology and Management."—At a meeting of the Dutchess County Medical Society in Poughkeepsie, October 14, Dr. Maximilian A. Ramirez, New York, discussed allergy.—Dr. Russell L. Cecil, New York, addressed the Niagara County Medical Society, October 13, on pneumonia.—Drs. Charles H. Baldwin and Joseph J. Witt, Utica, addressed the Oneida County Medical Society, October 13, at Broadacres Sanatorium, on "Tuberculosis of the Bones and Joints" and "Tuberculosis in Children" respectively.—Dr. Silas J. Banker, Fort Edward, recently resigned as secretary of the Washington County Medical Society after thirty years of service. Dr. Denver M. Vickers, Cambridge, succeeded him.

## New York City

**Hospital News.**—Dr. Bernhard Dattner, Vienna, lectured at Mount Sinai Hospital, October 7, on "Nervous Manifestations of Alimentary Hypersensitivity."—Dr. Robert E. Pound has been appointed director of the department of roentgenology of the Misericordia Hospital.

**District Meeting.**—The First District Branch of the Medical Society of the State of New York held its annual meeting at Morrisania Hospital, October 7. Among the speakers were Drs. Clarence H. Smith, on "Unique Methods of Tonsillectomy"; Frederick W. Williams and Thomas J. O'Kane, "Surgical Diabetes," and William Klein, "Treatment of Fracture of Femur."

**Academy of Medicine Election.**—Dr. James Alexander Miller, professor of clinical medicine, College of Physicians and Surgeons, Columbia University, has been chosen president of the New York Academy of Medicine for a term of two years; Dr. Arthur F. Chace, vice president for three years, and Dr. Lewis F. Frissell, recording secretary for three years. Dr. Miller will succeed Dr. Eugene H. Pool.

**Dr. Flexner to Teach at Oxford.**—Dr. Simon Flexner, director emeritus of the Rockefeller Institute for Medical Research, has been appointed Eastman visiting professor at Oxford University, Oxford, England, for the academic year 1937-1938. The Eastman professorship was founded by the late George Eastman of Rochester to provide for scholars in American universities to go to Oxford as visiting professors for terms of from one to five years.

**Friday Afternoon Lectures at the Academy.**—Dr. Hayes E. Martin delivered the third lecture of the Friday afternoon series at the New York Academy of Medicine, November 20, on "The Curability of Cancer of the Tongue by Modern Therapeutic Methods." Following is the list of lectures for December and January:

Dr. John Douglas, December 4, Acute Inflammation of the Gallbladder and the Biliary Ducts.  
Dr. Arthur C. deGraff, December 11, Rational Symptomatic Drug Therapy.  
Dr. Adolph G. G. DeSanctis, December 18, Common Gastro-Intestinal Diseases of Infants and Children.  
Dr. Percy S. Pelouze, Philadelphia, January 8, Gonorrhea in the Male and Its Treatment.  
Dr. Readie Garfield Snyder, January 15, Recent Advances in the Treatment of Chronic Arthritis.  
Dr. David P. Barr, St. Louis, January 22, Recent Advances in the Endocrine Field.  
Dr. Bernard S. Oppenheimer, January 29, Angina Pectoris and Coronary Artery Disease.

**Society News.**—Drs. Henry S. Dunning and Harold G. Wolff addressed the New York Neurological Society and the section of neurology and psychiatry of the New York Academy of Medicine, November 10, on "The Relation Between Function and Vascularity in the Nervous System" and Dr. Eugene Bernstein, on "The Emotional Factor in Skin Disorders." Dr. William W. Herrick delivered the first Friday afternoon lecture of the academy's series, November 6, on "Early Diagnosis and Treatment of Hypertensive Cardiovascular Disease"; the second was given by Dr. Martin E. Rehfuss, Philadelphia, November 13, on "The Gallbladder Problem."—Dr. Allen K. Krause, Baltimore, addressed the Brooklyn Thoracic Society, October 16, on "Modern Management of Clinical Tuberculosis."—Dr. Jerome P. Webster addressed the New York Surgical Society, October 28, on "Application of Principles of Plastic Surgery in General Surgery."—Drs. Hugo Roesler, Philadelphia, and Dana W. Atchley addressed the Medical Society of the County of Kings, October 20, on "Selected Topics Related to the Roentgenology of the Cardiovascular System" and "Nephrosis with Special Reference to Its Clinical Characteristics, Progress and Treatment" respectively.—Dr. Frank H. Lahey, Boston, addressed the Harlem Medical Association, November 4, on "Thyroid Disease and Hyperparathyroidism." Discussion was opened by Drs. Charles Gordon Heyd, President, American Medical Association; William Barclay Parsons and Henry W. Louria.—Dr. Benjamin Wallace Hamilton has been appointed secretary of the Medical Society of the County of New York to fill the unexpired term of the late Dr. Daniel S. Dougherty.

## NORTH CAROLINA

**Hospital News.**—A graduate course in pulmonary diseases was presented at Lincoln Hospital, Durham, October 15-16, by the North Carolina State Department of Education, Duke University, Durham, and the University of North Carolina, Chapel Hill.

**District Meeting.**—The Fifth District Medical Society held a meeting at Sanatorium, October 29, at which Dr. Irvin Stein, Philadelphia, was the guest speaker, on "Bone Metabolism." Others on the program were Drs. James W. Tankersley, Greensboro, on "Cancer of the Breast"; Verne S. Caviness, Raleigh, "Heart Pain"; Robert F. Leimbach, Charlotte, "Nervous Indigestion," and John N. Robertson, Fayetteville, "The Common Cold." Dr. Charles F. Strosnider, Goldsboro, president of the Medical Society of North Carolina, made an address at the dinner.

**Personal.**—Dr. Harry L. Brockmann, High Point, was elected chief of staff of the Burrus Memorial Hospital to succeed the late Dr. John T. Burrus.—Dr. Paul P. McCain, medical director and superintendent of the North Carolina Sanatorium for the Treatment of Tuberculosis, has been appointed manager of a new state sanatorium now under construction at Black Mountain, ten miles from Asheville. Dr. McCain will have charge of both institutions, with assistant managers who will be appointed later, it was said. It is expected that a part of the new hospital will be finished by April 1937.

**Society News.**—The Tenth District Medical Society held its fall meeting at Asheville, September 23. The speakers included Drs. James K. Hall, Richmond, Va., on "Guilt and Punishment"; James P. Rousseau, Winston-Salem, "Value of Radiation Treatment of Benign Lesions of the Female Pelvis," and Jake G. Woodward, Asheville, "Treatment of Early Syphilis."—Drs. James D. Whaley, Hickory, and Samuel M. Bittinger, Sanatorium, addressed the Catawba Valley Medical Society, Lincolnton, November 10, on diagnosis and treatment of genito-urinary tuberculosis and adult pulmonary tuberculosis,

respectively. —The Southeastern Branch of the American Urological Association is to be held in Charlotte, December 4-5. Dr. Hamilton W. McKay, Charlotte, is president-elect of the branch.

### OHIO

**Graduate Program at Toledo.**—The Medical Institute of the University of Toledo presented its third annual "Post-graduate Day Program" November 6. The guest lecturers were Drs. Otto H. Schwarz and David P. Barr, St. Louis, who spoke on obstetrics and endocrinology, respectively. The program is made possible through a bequest of the board of trustees of the old Toledo Medical College.

**Health Commissioners' Meeting.**—The seventeenth annual conference of Ohio health commissioners with the state health department was held in Columbus November 4-6. Among the speakers were Drs. Raymond A. Vonderlehr, U. S. Public Health Service, on syphilis; Arthur J. Skeel, Cleveland, essentials of good maternal care, and George M. Lyon, Huntington, W. Va., the school health program as part of the community health program. At a luncheon meeting Thursday November 5 the speakers were Drs. Wilson G. Smillie, Boston, on influenza, and John H. J. Upham, Columbus, President-Elect of the American Medical Association.

**Society News.**—Dr. Jacob Victor Greenbaum, Cincinnati, addressed the Clinton County Medical Society, Wilmington, October 13, on "Preventive Procedures in Infancy." —Dr. Thomas P. Sharkey, Dayton, spoke on insulin protamine in treatment of diabetes mellitus at a meeting of the Darke County Medical Society, Greenville, October 16. —Dr. George I. Nelson, Columbus, discussed cardiovascular diseases before the Hardin County Medical Society at Kenton, October 15. —Dr. Harry E. Le Fever, Columbus, addressed the Hempstead Academy of Medicine, Portsmouth, October 12, on "Common Lesions of the Spinal Cord." —Dr. Louis J. Roth, Columbus, addressed the Morrow County Medical Society, Mount Gilead, October 13, on treatment of syphilis and gonorrhea.

### OKLAHOMA

**Clinical Conference.**—The seventh annual conference of the Oklahoma City Clinical Society was held October 26-29 at the Biltmore Hotel, Oklahoma City. The guest speakers were Drs. Charles Gordon Heyd, New York, President of the American Medical Association, and Webb W. Weeks, New York; Tracy B. Mallory, Boston; George R. Livermore and Willis C. Campbell, Memphis; Hans Lissner, San Francisco; Francis E. Seneor and Sumner L. S. Koch, Chicago; James R. McCord, Atlanta, Ga.; Tinsley R. Harrison, Nashville, Tenn.; Waltman Walters, Rochester, Minn.; Charles L. Brown, Philadelphia; Willard R. Cooke, Galveston, Texas; Albert C. Furstenberg, Ann Arbor, Mich.; Wilburt C. Davison, Durham, N. C., and Karl A. Menninger, Topeka, Kan.

### PENNSYLVANIA

**Society News.**—Dr. Ross K. Childerhose, Allenwood, addressed the Lebanon County Medical Society, November 10, on early diagnosis of tuberculosis. —Drs. Eldridge L. Eliason and Lawrence Curtis, Philadelphia, were the guest speakers at the fall clinic of the Lycoming County Medical Society, Williamsport, November 13. Both conducted clinics in the morning; in the afternoon Dr. Eliason spoke on "Deformity in Fracture Results" and Dr. Curtis on "Treatment of Facial Injuries."

#### Philadelphia

**Innovation in Programs for Branch Societies.**—The program committee of the Philadelphia County Medical Society instituted a new plan for meetings of branch societies with a symposium on the diagnosis of syphilis, which was presented in turn before each branch. The speakers were Drs. Jefferson H. Clark, on laboratory aspects; Sigmund S. Greenbaum, lesions of the skin and mucous membranes; William Egbert Robertson, cardiovascular syphilis, and Michael A. Burns, syphilis of the nervous system.

**Society News.**—Drs. Edward T. Crossan and Robert R. Layton Jr., among others, addressed the Philadelphia Academy of Surgery, November 2, on "The Fay Cast in the Treatment of Fracture of the Neck of the Femur." —Drs. Alexander Spencer Kaufman and Irvin Feldman were among the speakers who addressed the Philadelphia Laryngological Society, November 3, on "Intratympanic Thyroxine Injections in Chronic Catarrhal Deafness." —A symposium on the use of analgesia and anesthesia in obstetrics was presented at a meeting of the Obstetrical Society of Philadelphia, November 5. Dr. Charles

M. M. Gruber gave a paper on "Pharmacologic Actions of the Newer Barbituric Acid Compounds," which was discussed by Drs. Henry S. Ruth, Lida Stewart Cogill, Jesse O. Arnold, Thaddeus L. Montgomery, Philip F. Williams, Clifford B. Lull and Edward A. Schumann. Dr. Pascal Brooke Bland described visits to European clinics. —A symposium on psychiatry and the criminal insane was presented at a meeting of the Philadelphia Psychiatric Society, November 13, by Drs. Charles A. Zeller, Waymart, and Philip Q. Roche.

### Pittsburgh

**Society News.**—A symposium on infantile paralysis was presented at a meeting of the Pittsburgh Academy of Medicine, November 10, by Drs. Howard H. Permar, Henry T. Price and David Silver. —Drs. William W. Briant Jr., Mount Lebanon, and Paul J. McGuire, Homestead, addressed the Pittsburgh Pediatric Society, November 13, on "Some Extra-genital Effects of Ureteral Obstruction" and "Primary Pulmonary Tuberculosis and the Tuberculin Test" respectively. Dr. Alfred S. McElroy reported a case of acute hemorrhage from the throat.

**District Meeting on Syphilis.**—The Tenth Councilor District of the Medical Society of the State of Pennsylvania met in Pittsburgh November 18 with a program devoted to syphilis. Dr. William H. Guy and his associates gave clinical demonstrations at the Falk Clinic in the morning. After a luncheon at the Hotel Schenley the following program was presented:

Dr. William H. Guy, Modern Treatment of Various Stages of Syphilis.  
Dr. Frederick B. Utley, Importance of Recognition and Treatment of Cardiovascular and Visceral Syphilis.

Dr. George J. Wright, Manifestations, Sequelae and Treatment of Syphilis of the Nervous System.

Dr. Edgar S. Everhart, Harrisburg, The Part That Can Be Played by the Physician to Stop the Spread of Syphilis.

At a public meeting at the Schenley in the evening, Dr. Guy showed slides of syphilis; Dr. Cornelius C. Wholey spoke on "Mental Conditions and Social Problems Caused by Syphilis," and Dr. Allan J. McLaughlin, U. S. Public Health Service, Washington, D. C., "The Part That Can Be Played by the Public to Stamp Out Syphilis."

### TENNESSEE

**Health at Memphis.**—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of 37 million indicate that the highest mortality rate (23.8) appeared for Memphis and that the rate for the group of cities was 11.6. The mortality rate for Memphis for the corresponding week of 1935 was 16.7 and that for the group of cities was 10.8. The annual rate for the eighty-six cities for the forty-five weeks of 1936 was 12.1, as compared with a rate of 11.3 for the corresponding period of the previous year. Caution should be used in the interpretation of these weekly figures, as they fluctuate widely. The fact that a city is a hospital center for a large area or that it has a large Negro population may tend to increase the death rate.

### WASHINGTON

**Hospital News.**—Providence Hospital, Seattle, celebrated its twenty-fifth anniversary recently. Three physicians who served on the original reception committee were present at the jubilee: Drs. Philip von Phul, Sherald F. Wiltse and Harry A. Shaw, all of Seattle.

**Society News.**—Drs. Philipp Schonwald and Hale A. Haven addressed the King County Medical Society, Seattle, November 16, on "Atmospheric Causes of Allergic Diseases in Western Washington" and "Operability and Curability of Malignant Tumors Arising from the Brain" respectively. The society was addressed, October 19, by Drs. Paul R. Rollins on "Reduction of Fetal Mortality in Breech Presentations" and Frederick B. Exner, "Benign Tumors of the Stomach."

### WISCONSIN

**University News.**—Marquette University instituted this year a course in medical technology leading to the degree of bachelor of science. The first two years will be spent in the liberal arts college and the last two in practical work in Milwaukee hospitals.

**Society News.**—Drs. Emil Novak, Baltimore, and John W. Smith, Milwaukee, addressed the Medical Society of Milwaukee County, October 14, on "The Cause and Treatment of Functional Uterine Bleeding" and "Acne Vulgaris" respectively. —Dr. Joseph W. Gale, Madison, among others, addressed the Milwaukee Society of Clinical Surgery, October 27, on "Treat-

ment of Suppurative Pleurisy."—Drs. Frank A. Boeckman, Marshfield, and Merritt L. Jones, Wausau, addressed the Wood County Medical Society, Wisconsin Rapids, August 26, on carbon monoxide poisoning and backache, respectively.—Dr. Thomas O. Nuzum, Janesville, addressed the Rock County Medical Society, Beloit, October 27, on "Diagnosis of Encapsulated Pleural Effusions."

**Milwaukee Medical Service Plan.**—The Medical Society of Milwaukee County inaugurated a medical service plan for the budgeting of medical and hospital bills, October 20, with Mr. B. B. McKinstry in charge. Patients will be referred to the service by their own physicians, and details of meeting costs will be worked out to fit the individual income. According to a statement issued by the society, the plan is the result of several years' study of the local situation and of similar plans in other cities. Most of the hospitals in Milwaukee have agreed to cooperate with the service. Members of the committee that worked out the plan are Drs. Dexter H. Witte, chairman; Timothy J. Howard; William J. Houghton, Wauwatosa, and Mr. Theodore Wiprud, executive secretary of the society.

**Physicians Honored.**—Drs. Theodore J. Redelings, Marinette, and Edward Sawbridge, Stephenson, Mich., were guests at a testimonial dinner in Marinette, October 21, honoring them for fifty years of medical service. Dr. Sawbridge has practiced in Menominee County fifty-three years and Dr. Redelings is in his fiftieth year of practice in Marinette. The principal speakers at the dinner were Drs. Ralph M. Carter, Green Bay, past president, and Stephen E. Gavin, Fond du Lac, president of the State Medical Society of Wisconsin. Medals were presented to the two physicians. Dr. John C. Wright, Antigo, was honored at a luncheon given by the Langlade County Medical Society, October 14, marking his retirement from medical practice after fifty-five years. Dr. Wright was for many years secretary of the county society.

### GENERAL

**Examinations in Dermatology and Syphilology.**—The American Board of Dermatology and Syphilology announces that a written examination for Group B applicants will be held in various cities throughout the country April 17, 1937. Oral examinations for Group A and B applicants will be held in Philadelphia, June 7-8, 1937. Dr. C. Guy Lane, 416 Marlborough Street, Boston, is the secretary.

**New Surgical Journal.**—A new publication entitled "Surgery, A Monthly Journal Devoted to the Art and Science of Surgery," will make its appearance January 1. This journal is not to be the official organ of any group or organization. According to the announcement, it is to be a clinical and experimental journal of surgery with a representation in its editorial board and committee on publications of representatives from the field of general surgery and its specialties, as well as the preclinical medical sciences. Dr. Owen H. Wangensteen, professor and head of the department of surgery, University of Minnesota Medical School, Minneapolis, and Dr. Edward W. Alton Oschner, professor and head of the department of surgery, Tulane University of Louisiana School of Medicine, New Orleans, will edit the new publication.

**Clinical and Climatological Society Meeting.**—Dr. James E. Paullin, Atlanta, was elected president of the American Clinical and Climatological Association at its annual meeting at Richmond, Va., October 26-28. Vice presidents elected were Drs. John B. Hawes II, Boston, and Ralph H. Major, Kansas City, Mo., and Dr. Francis M. Rackemann, Boston, was reelected secretary. Speakers at the meeting included:

- Dr. Benjamin M. Baker Jr., Baltimore, The Arthritis of Bacillary Dysentery.
- Dr. Howard F. Root, Boston, Insulin Protamine in Treatment of Diabetes.
- Dr. Frederic M. Hanes, Durham, N. C., Metabolic Studies in Sprue.
- Dr. Edgar Mayer, New York, The Dietary Treatment of Tuberculosis—More Recent Aspects.
- Dr. Lewis J. Moorman, Oklahoma City, Calcification of the Spleen.
- Dr. Alphonse R. Dochez, New York, General Significance of the Etiologic Agents of Upper Respiratory Tract Infection.
- Dr. Roy R. Snowden, Pittsburgh, Treatment of the Thyroid Crisis.
- Dr. Alfred H. W. Caulfield, Toronto, The Correlation of Specific Sensitization as It Occurs Clinically in Man and as Induced Experimentally in Animals.

The next meeting will be held at Baltimore in October 1937.

**Conference on Hospital Statistics.**—A feature of the meeting of the American Hospital Association in Cleveland was a conference on hospital statistics, attended by representatives of national and regional organizations. An analysis of statistical material obtained from about 1,000 hospitals as to

bed capacity and number of admissions, presented by Dr. Joseph W. Mountin, U. S. Public Health Service, Washington, D. C., revealed the importance of uniform definitions for the hospitals in filling out questionnaires and for the local and national agencies in the preparation of them. It was pointed out that the use of the manual of the American Hospital Association might ultimately reduce the number of independent questionnaires received from different national associations. The group decided to meet in February in Chicago to consider revision of the definitions for adoption by the various representatives at the meeting.

**Thirtieth Annual Sale of Christmas Seals.**—The thirtieth annual sale of Christmas Seals will be launched by the National Tuberculosis Association and its component societies Thanksgiving Day. The first sale was held in Delaware in 1907 by Miss Emily P. Bissell, who raised \$3,000 to use toward building a hospital for children with tuberculosis. The National Tuberculosis Association was formed in 1904 and now has 1,981 affiliated associations. Listing the milestones in the tuberculosis movement, the association mentions the first fresh air school founded in Providence, R. I., in 1908, and the first preventorium in Farmingdale, N. J., in 1909. Now there are 173 institutions providing preventorium care. New York as early as 1909 authorized the building of county tuberculosis hospitals; now there are almost 200 besides more than



1,000 other federal, state, city and privately owned institutions giving special care to the tuberculous. Michigan was the first state to use the "traveling clinic" to locate isolated cases in rural areas. In 1920 the association formed a committee on medical research, which organized and coordinated the work of individuals and groups. The first "early diagnosis campaign" was conducted in the spring of 1928. Tuberculosis associations are also concerned with the problem of the recovered patient, the first workshop for such patients having been established in New York in 1913.

**Society News.**—Officers of the Southern Sanatorium Association, elected at the recent annual meeting at Hot Springs National Park, Ark., are Drs. John Donnelly, Huntersville, N. C., president, and Paul A. Turner, Louisville, secretary.—Dr. Edward J. Murray, Lexington, Ky., was chosen president of the Southern Tuberculosis Conference at the recent annual meeting at Hot Springs National Park, Ark., and Mr. James P. Kranz, Nashville, Tenn., secretary.—Dr. Alan M. Chesney, Baltimore, was chosen president-elect of the Association of American Medical Colleges at the recent annual meeting, and Dr. Edward S. Ryerson, Toronto, was installed as president. Dr. Loren R. Chandler, San Francisco, is vice president; Dr. Arthur C. Bachmeyer, Chicago, treasurer, and Dr. Fred C. Zapffe, Chicago, secretary. The next annual meeting will be held in San Francisco, Oct. 24-26, 1937.—Dr. Percival S. Rossiter, Washington, D. C., was installed as president of the Association of Military Surgeons of the United States and Canada at the recent annual session in Detroit. Vice presidents are Drs. Arthur E. Lord, Plano, Ill.; Frank R. Keefer, Washington, D. C., and Harold D. Corbusier, Plainfield, N. J. Major Gen. Harry L. Gilchrist, Washington, D. C., was reelected secretary.—At the annual meeting of the Tri-State Medical Society in Longview, Texas, October 26, Dr. John D. Young, Shreveport, La., was elected president, succeeding Dr. Dunbar R. Baber, Daingerfield, Texas, and Joseph M. Gorton, Shreveport, secretary-treasurer. The next annual session will be held in Shreveport.

## Government Services

### Expansion Program of Veterans' Administration

When the present program of hospital construction is completed by the Veterans' Administration, there will be available 12,914 additional beds. Of these, 8,993 will be for the treatment of neuropsychiatric patients, 1,576 for general medical and surgical patients, 157 for tuberculosis, and 2,188 for domiciliary purposes, as in soldiers' homes. A total of 3,888 new beds will be added during the current fiscal year under the administration's building project, which provides for additional beds in forty-two of the existing hospitals and the erection of five new facilities. Appropriations made available by Congress Feb. 2 and Aug. 12, 1935, and March 19, 1936, totaled \$29,015,420.

## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Oct. 10, 1936.

#### Report of Committee on Weil's Disease

It is only since the war that Weil's disease (spirochaetosis icterohaemorrhagica) has been identified in this country, but of late it has been observed in an increasing number of occupations. The result is that in July 1935 the government appointed a committee, with Sir Humphry Rolleston as chairman, to report whether the disease should be scheduled as an industrial one under the workmen's compensation act. The committee has now presented its report, recommending that this should be done and giving an important survey of our present knowledge of the disease. The committee points out that, while "Weil's disease" (first described by Weil in 1886) is used as a synonym for infection with *Leptospira icterohaemorrhagiae*, it is liable also to be used to cover cases of illness not due to this organism. The use of such terms as spirochaetosis or infective jaundice might give rise to confusion for the following reasons: 1. Other spirochetes produce forms of disease that might be described as "spirochaetosis." 2. Infection with *Leptospira icterohaemorrhagiae* does not always produce jaundice. 3. Other kinds of infective jaundice, such as epidemic catarrhal jaundice, occur, especially among school children. The nature of the infection was discovered in Japan in 1914 but did not become known in this country until 1916, after outbreaks among troops on the Western Front. Cases have been reported from Germany and Holland. In the latter many have been due to bathing or immersion in canals.

#### INCIDENCE IN GREAT BRITAIN

Though only now about to be made notifiable in England, the disease has been notifiable since 1924 in Scotland. The number of cases notified between the beginning of 1924 and October 1935 was 424, but about half of these related to school-children and were regarded as epidemic catarrhal jaundice. Of the remaining cases some were doubtful, reducing the number of accepted cases to seventy-seven, twenty-three of which were fatal. The occupations were miners (twenty-five cases), fish-workers (thirty-eight), agricultural workers (six) and miscellaneous (eight). In England and Wales a number of cases have come to light, particularly of late, in sewer workers, miners, farm workers, scavengers, butchers and others. There have also been cases apparently due to bathing or accidental immersion in water. For the decade 1925-1934 deaths registered in England and Wales as due to Weil's disease numbered thirty-seven, of which thirty-two were in males and five in females. In a considerable number no occupational source could be suggested. Outside Scotland the disease is not known to have occurred in miners. In many of the cases the diagnosis was based on clinical observations. It is evident that the true incidence of the disease in this country cannot at present be estimated, but the inference is drawn that most of the cases were of occupational origin.

#### SOURCES OF INFECTION

The sewer rat is the main carrier of *Leptospira icterohaemorrhagiae*, but no manifestations of the disease are produced in it. The organism persists in the animal over a long period and is excreted in the urine, from which man is directly or indirectly infected. Moisture appears to be essential for its persistence outside the rat, and man is usually infected by water or slime in places infested by rats, such as mines, sewers, fish-cleaning premises, piggeries and slaughterhouses, or by bathing in polluted water. Thirty per cent of London rats were found to be carriers of *Leptospira*. It may enter the

human body through skin abrasions or the mucous membrane of the nose or alimentary canal (from contaminated food). Dogs may be infected and, as they excrete the organism in their urine, may be sources of human infection. The incubation period varies from four to nineteen days.

#### SYMPTOMS

There are fever of sudden onset, frequently with rigors, intense pain and muscular tenderness, congestion of the conjunctiva, jaundice, hemorrhagic herpes on the lips, and hemorrhages into the skin and from the mucous membranes. But some of these may be absent. In Holland, in 1932, 61 per cent of the cases were without jaundice.

#### DIAGNOSIS

There is little to distinguish the disease from acute necrosis of the liver. A mild infection may be mistaken for influenza or rheumatism. The committee therefore says that compensation should not be based solely on clinical evidence. The diagnosis should be based on finding the leptospira in the blood or urine or on a serologic test—agglutination or adhesion (adhesion of the motile bacilli, such as *B. coli*, to the leptospira in dilutions of the patient's serum). The medical witnesses said that, in view of the practical difficulties of examination of the blood and urine and guinea-pig inoculation, serologic examination will be the most convenient and reliable method.

#### The Mechanization of Medicine

In an inaugural address at the opening of the winter session at Westminster Hospital, Lord Horder dealt with the mechanization of medicine. As examples of efforts to mechanize medicine, he took the exploitation of instruments of precision, the elaboration of bacteriologic and biologic methods, the commercializing of pharmacology, and the rapid sequence of new machinery in physical therapy. There was good in all these things, but if they were not careful they would overlay and replace the most essential factor in the diagnosis and treatment of disease—the personal contact of doctor and patient. The patient would not save himself from this danger. He had seen most of the rest of life mechanized, so why not medicine? His faith in a piece of apparatus was pathetic. He knew what his blood pressure ought to be. The instrument makers were now dictating standards, as though the doctor's patient might not express individuality even in blood pressure. The doctrinaire attitude toward diet adopted by certain pundits seemed to make a great appeal to many patients. They seemed to think that any day now medicine might discover a standard diet, if it had not done so already. It was the doctor's business to counter all this and to reveal the patient to himself. His whole duty was to examine carefully, explain clearly and watch diligently. If he was of necessity a humanist in former generations, it behooved him to be all the more humanist today.

#### National Health Program

Addressing an important political meeting, Mr. Chamberlain, chancellor of the exchequer, said that the government would cooperate with the local authorities to secure for the younger generation greater opportunities to improve their physical condition—a need which was particularly great in view of the progressive decrease of our population in sight. This announcement has evoked widespread approval. In a communication to the *Times*, Sir Kingsley Wood, minister of health, said that the time had come when we must look more and more at our national health and the services that are provided from a new angle. There were four main objects to which our national health policy should be directed. First, we must go steadily on with our existing work and increase it wherever desirable. A healthy nation must largely depend on healthy environment. The great effort to improve the housing conditions must be vigorously maintained. The slum clearance campaign is now

about half way through its course. Already 500,000 slum dwellers have gone to better homes. An equally important campaign against overcrowding has just begun. Secondly, we must fill gaps in our health services. There is, for instance, a gap in the provision made for the time when children leave school and the time when they enter employment and national insurance. Another project is to make available to every mother, whatever her circumstances, a competent midwife. Thirdly, we must develop a more positive policy in the matter of health—a policy that not only safeguards against disease but actively promotes health. We should have a much greater development of the facilities for physical recreation and exercise. Our people are living some fifteen years longer than their forefathers, but we must make sure that those longer years are worth living; and life to be worth living must be healthy and vigorous. We should remember that when young people leave school they need more than ever opportunities for exercise and the maintenance of health. The steady growth of open spaces and modern town planning are two of the best signs of the times. It is a very good thing that some millions were spent last year on recreation grounds and swimming pools. We depend too much on drugs and bottles of medicine and not enough on personal hygiene. Fourthly, we must bring home to the people the valuable public health services available and also the value of self equipment for health. Publicity and propaganda are necessary.

#### Physicians and Air Raid Precautions

Plans for providing antigas instruction for physicians were described by Major Stuart Blackmore, medical adviser to the air raid precautions department of the home office, at a meeting of branch secretaries of the British Medical Association. Of the three forms of bomb used in air attacks—high explosive, incendiary and gas—he placed gas last but only on the proviso that the population was educated and protected and educated in antigas measures. Gas used against an unprepared, uneducated and unprotected population was a quite different matter. The aim of the gas bomb would then be achieved—an effect on the morale of the nation. It was therefore vital that the medical profession should know all about gas, since it was one of the main supports of the national morale. Gas, labeled definitely as a scientific subject, was one of the things a physician would be expected to know about by his patients. As a result of long thought and much deliberation with various representative medical bodies, a scheme had been evolved. Ten physicians had been selected and had attended or were actually attending the Civil Anti-Gas School in Gloucestershire. These ten would be centered in various places throughout the country closely connected with medical schools, because one of their duties would be to train medical students. They would also instruct the practicing physician. For this purpose the machinery of the British Medical Association had been freely offered and gratefully accepted. The air raids precaution department intended to place some forty or fifty trained units in various localities. Each unit would draw classes from an area of from 10 to 15 miles. Then the unit would be shifted to another locality and the procedure repeated. Nothing less than twelve hours' instruction was likely to be sufficient. Major Blackmore suggested six periods of two hours each, one hour of theoretical and one hour of practical instruction. Whether that instruction took place six days in succession or one day a week or a fortnight was a matter of local arrangement. The government would provide the instructors and equipment free of charge. The maximum in a class should be sixty, but from the point of view of practical instruction from thirty to thirty-five was a better number. A series of handbooks on the subject had been published by the government, of which one was clinical and designed for the medical profession. Gas masks would be available during the course. Mobile gas chambers, of which

some thirty-five or forty were already scattered about the country, would be available for instruction. The response to the scheme had been overwhelming and it would be necessary to increase the number of medical instructors.

#### New Altitude Record

The air ministry announces that a new high altitude record has been made by Squadron Leader Swain, who attained a height of 49,967 feet, breaking the previous record, established in August, by 1,269 feet. A sealed pressure suit enabled the pilot to remain very high for nearly two hours while he endeavored to attain the maximum height possible. The minimum pressure observed was 92 mm. of mercury and the lowest temperature —49.8 C. In the *British Medical Journal* Group Captain G. S. Marshall of the staff of the Central Medical Establishment of the Air Force has made the following commentary on the performance: Human beings are adapted to an air pressure of 15 pounds to the square inch but their tolerance is such that they can live, if doing no appreciable physical work, at an atmospheric pressure a little more than half this. At a height of 18,000 feet the atmospheric pressure is one-half that at the ground level and therefore the oxygen pressure is insufficient for full human activity and so has to be supplemented either by increasing the percentage of oxygen in the air inspired or by increasing the pressure within the subject's lungs. The former is the most practicable but, even when carried to the limit of breathing pure oxygen, is inadequate for altitudes much exceeding 43,000 feet. At this height breathing pure oxygen is physiologically comparable to breathing air at 15,000 feet, usually regarded as the safe limit for flight without oxygen. Beyond 43,000 feet some means of artificially increasing the pressure in the lungs, either with or without the use of additional oxygen, is necessary. This cannot be done to any useful extent without balancing the pressure within the lungs with that outside them. The subject's immediate atmosphere has to be maintained at least at a pressure equivalent to that of the atmosphere at 43,000 feet. This can be done by subjecting him to a pressure slightly above that of the atmosphere in an air-tight cabin or air-tight suit. A sort of diving suit of highly specialized character is used, in which a pressure previously determined is maintained.

#### Lord Moynihan's Estate

The gross estate of the late Lord Moynihan is estimated at \$1,615,000. He bequeathed \$10,000 to the Royal College of Surgeons to found an eponymous lecture, to be given at such dates and under such arrangements as the president shall from time to time determine. To the Leeds Medical School, in memory of his mother Ellen Anne Moynihan, he bequeathed \$5,000 to establish an eponymous lecture to be delivered annually, biannually or triannually, as the Faculty of Medicine may decide, by some surgeon not connected with Leeds University, on any subject he may select. After the death of his wife, a week before his own, it was Lord Moynihan's intention to bequeath \$5,000 to Leeds University for founding in her memory an Isabella Wellesley Lady Moynihan scholarship to be given to the winner of the Hey (a well known Leeds surgeon of the late eighteenth century) gold medal, which he had already endowed. He died before he could make the necessary alterations in his will, but the family intend to carry out his wishes.

#### Parallel Evolution

In his presidential address to the British Speleological Society, Sir Arthur Keith brought forward a new theory of the origin of the modern races of mankind. Heretofore anthropologists believed that modern races, black, brown, white and yellow, evolved from a common mid-Pleistocene stock, but recent discoveries in caves were compelling them to recast their ideas. They were now tempted to believe that by the beginning of the Pleistocene period, some 500,000 years ago, the ancestors

of the Mongol, Australian and Negro were already in occupation of the continental areas now inhabited by their descendants, and that after separation each race underwent a similar series of parallel changes, such as reduction of tooth and jaw, enlargement of the brain, and replacement of simian by human markings. In support of this theory, Keith adduced Mongolian, Australian and Negro characteristics observed by him in the skulls of *Sinanthropus* from China, *Pithecanthropus* from Java and Kanam man from East-Africa. It was necessary to reorientate our working theories. Only the independent evolution of the races of mankind during the whole length of the Pleistocene could explain the known facts. This view deepened the mystery of human evolution, for it implied, as in the past, that the future of each race lay in its genetic constitution. Throughout the Pleistocene the separated branches of the human family appeared to have been unfolding a program of latent qualities inherited from a common ancestor at an earlier period.

#### Promotion of the Safety of Miners

The report of the Safety in Mines Research Board shows much important work done to promote the safety of miners. For the first time evidence is produced supporting the claim that has been advanced that such increased illumination of the coal face as can be obtained from the electric mains would give greater safety. Progress has been made in the development of protective equipment. During the year, 140,000 hard hats have been supplied to miners. Remarkable figures from a mine working thick seams in South Wales show that in 1933 (when no hats were in use) the injury rate per thousand man shifts worked was 0.79 against 0.075 for 1935, when 85 per cent of those employed underground were equipped with hats. Gloves have been used to an increasing extent, and large numbers of safety boots are in use. The toes and insteps are the parts of the foot most susceptible to injury, but all parts require adequate protection. Eye injuries are among the most serious of nonfatal accidents but can be almost eliminated by wearing properly designed goggles. In certain operations, shin guards, knee pads and elbow pads have proved highly effective in preventing injuries. The knee pads and elbow pads are also of value in preventing "beat knee" and "beat elbow." Safety trousers fitted with removable knee pads are being worn, but some workmen prefer rubber pads sewn into a pocket in the ordinary trousers knees.

#### PARIS

(From Our Regular Correspondent)

Oct. 15, 1936.

#### Infections Due to *Bacillus Funduliformis*

During the past year several papers on generalized infections due to *Bacillus funduliformis* have appeared. A complete review by Prof. André Lemierre of Paris appeared in the *Lancet*, March 28, and since then two new observations were reported at the May 8 meeting of the Société médicale des hôpitaux by Donzelet, Meyer and Olivier, referred to in a previous letter. At the May 22 session of the same society this type of generalized infection was the subject of three additional communications by Paris internists. The first of these was by Lamy and Fontreaulx on a case of thrombophlebitis of the cavernous sinus with septicopyemia due to *Bacillus funduliformis*. The patient was a girl, aged 4 years, who was admitted to the service of Professor Debré on account of an acute otitis media. Four days later the signs of a bilateral thrombosis of the cavernous sinus appeared. Cultures from the pus of the ear infection and of the blood revealed the presence of *B. funduliformis*. The child died two days later, the final clinical picture being that of a meningitis accompanied by jaundice and pulmonary infection. At necropsy a suppurative thrombophlebitis of both the cavernous and the coronary sinus were found, as well as an extensive osteomye-

litis of the petrous portion of the temporal bone and body of the sphenoid. The authors did not believe that ligation of the internal jugular vein would appear to be indicated in cases of postanginal or postotitic septicemia, because it would not be able to prevent an endocranial thrombophlebitis due to an organism such as *B. funduliformis*, which seems to have a special affinity for the venous circulation.

The second paper was by Lemierre and Moreau on a cured case of septicopyemia following tonsillitis and due to *B. funduliformis*. The patient was a woman, aged 24. The symptoms were so characteristic of *B. funduliformis* infection that this diagnosis was made before it was confirmed by the bacteriologic examination. The onset was sudden in the form of a severe chill on the fourth day of a severe tonsillitis. The following days, and at irregular intervals, there appeared cycles of chills and high fever, signs of pulmonary infarction and arthritis of the spine. This triad alone left little doubt as to the diagnosis, which found its corroboration by a positive blood culture for *B. funduliformis* on the sixth day after appearance of the tonsillitis. In spite of the gravity of the complications, the patient recovered. The authors were of the opinion that this was due to the fact that there were only two minute demonstrable pulmonary foci and no empyema. The chief menace in cases of *B. funduliformis* infection was the existence of multiple pulmonary suppurative foci complicated by an empyema.

The third paper was by Professor Lemierre and three of his associates, Reilly, Heine and Hamburger, and was on ligation of the internal jugular vein in a case of septicopyemia due to *B. funduliformis* and following tonsillitis. The patient was a girl, aged 16 years, with initial symptoms of an acute tonsillitis followed two days later by repeated severe chills and high fever. There was no evidence of pulmonary foci, but the blood culture revealed, on the fifth day after the onset, the presence of *B. funduliformis*. As a prophylactic measure against further dissemination, ligation of the left internal jugular vein was performed but was of no avail, death taking place five days later. Three hemocultures had been positive for *B. funduliformis* during the patient's stay in the hospital. The necropsy revealed the presence of a small amount of pus in both pleural cavities, several foci of pulmonary suppuration, a minute abscess in the deeper portion of the left tonsil and a widespread peritonsillar thrombophlebitis with *B. funduliformis* in the thrombi. The authors stated that if the internal jugular ligation had been performed at an earlier period of the infection the result might have been different. However, this procedure had improved the prognosis of anaerobic infections but little, according to German authors.

#### Identity of *Bacillus Funduliformis* and *Fusobacterium Nucleatum*

Among the Parisian internists who have studied generalized infections due to *B. funduliformis* most intensively may be mentioned Prof. André Lemierre, in charge of the large Claude Bernard Hospital for Infectious Diseases, and his associates Grumbach and Reilly. At the June 30 meeting of the Académie de médecine they again called attention to the fact that from the clinical picture alone one is able to recognize a septicopyemia as being due to anaerobic bacteria. These generalized infections appear suddenly after a severe tonsillitis in the form of a triad of symptoms, high fever, pulmonary infarcts (with or without accompanying empyema) and suppurative arthritis. Icterus is less constantly observed but highly significant when present. The lesions occur in such a uniform manner that the specific character of the infection is evident. In the majority of cases the organisms that have been isolated have been anaerobic and gram negative, associated or not with anaerobic streptococci. The difficulty of classifying anaerobic bacteria in general and the frequent occurrence of incomplete

identifications explain why it is impossible to state whether the anaerobes found in these cases belong to one or to several varieties. The authors were able, however, to affirm that the *Fusobacterium nucleatum* isolated in several cases at Zurich is identical with the *Bacillus funduliformis* of Hallé, constantly found at the Claude Bernard Hospital in post-tonsillitis septiciemias since the original report by Teissier, Reilly and Rivalier.

### The Skin Reactions to Tuberculin in Children

A survey has just been made at the clinic of the pediatrician Professor Nobécourt of the tuberculin reactions observed in 1,989 children from 6 to 10 years of age and in 1,776 from 10 to 15 years of age. The detailed statistics appear in an article in the May 6 *Gazette des hôpitaux*. Professor Nobécourt considers the ordinary and intradermal reactions to tuberculin of great value in the detection of tuberculosis in infants and children. One must bear in mind that there are exceptions, such as cases showing positive evidences of the presence of a tuberculous focus with negative reactions and on the other hand one encounters children without any demonstrable focus whose reactions are positive. Every child admitted to the service of Professor Nobécourt in the Hôpital des enfants malades (the largest children's hospital in Paris) is given the ordinary tuberculin skin test on admission and this is repeated at least once a month and finally controlled by the intradermoreaction. The conclusions reached from this study of 3,765 children between the ages of 6 and 15 years, are as follows:

1. The percentage of positive skin reactions is already high during the seventh year. It increases but little between the ages of 7 and 10 years but markedly between the tenth and fifteenth years. During the seventh year it is more marked in girls than in boys. Between the tenth and the fifteenth year it is about the same in intensity in the two sexes. Tuberculous infection appears to occur especially often before the age of 7 years and between the tenth and fifteenth years. Before the age of 7 years it is observed more frequently in girls than in boys, while between 7 and 10 years the reverse is true. From 10 to 15 years the incidence is the same in the two sexes.

2. The percentage of active tuberculous foci is relatively low during the seventh year, being higher in girls than in boys. It increases little from the seventh to the tenth year in boys and to the thirteenth year in girls. Definite increases occur in boys during the eleventh and twelfth years, whereas in girls this is observed during the fourteenth and fifteenth years. During the latter, the percentage is higher in girls than in boys.

3. It is evident that age and sex have a distinct influence on the percentage of positive skin reactions to tuberculin and of active tuberculous foci. This influence is due to endogenous and exogenous factors of complicated character.

### Twenty-Third Annual Hygiene Congress

This year's congress organized by the Society of Public Health and Sanitary Engineering will be held in Paris from the 19th to the 22d of October at the Pasteur Institute. The secretary of public health and Professor Leclainche, (president for 1936) will preside. There will be a symposium on the organization of a service of epidemiology (human and veterinary), on associated vaccinations (human and veterinary), on the teaching of hygiene in the veterinary schools, and on the services which veterinarians can render in public health efforts. Professor Levaditi of the Pasteur Institute will read a paper on the ultraviruses, and there will be papers on our present knowledge of disinfection and also on the protection of civilians against toxic gases employed in warfare. The Society of Medical Meteorology will hold a special session on October 21 during the congress. Those desiring to attend this congress can obtain all information through Dr. Dujarric de la Rivière at the Pasteur Institute.

### Commercial Exploitation of Pharmaceutical Preparations by Physicians

A bill was introduced during the last session of the chamber of deputies with the object of forbidding any unethical relations between the exploiters of pharmaceutical preparations and any licensed physician. The latter will not be permitted to give free or paid consultations in any establishment where drugs are sold unless the physician owns such a store. The subleasing of a store or office by a physician to any one not practicing medicine for the purpose of exploiting some pharmaceutical preparation is also forbidden. The object of the proposed law, as explained by Dr. Cousin, a Paris deputy, who introduced the bill, is to put a stop to practices now existing in France which are unworthy of the dignity of the medical profession. Many physicians allow their names to be employed as recommending certain drugs because this endorsement greatly aids their sale. It has been proposed to found an "Order of Physicians" in France because it would be easier to discipline those guilty of unethical methods of advertising. Thus far but little progress has been made in this direction although the need of stricter control of those who utilize the radio, weekly journals published by drug houses and similar methods is generally recognized here.

### Professor Gosset Honored

Prof. Antonin Gosset, one of the two heads of the surgical department of the Paris Medical School, was recently elected a fellow of the Academy of Sciences, a much merited honor. In order to celebrate the event, a number of assistants and colleagues of Professor Gosset are subscribing to a fund with which a sword (as is the custom on such occasions in France) will be presented to the new academician.

### BERLIN

(From Our Regular Correspondent)

Sept. 21, 1936.

### The Medical Führer and Unlicensed Practitioners

The national führer of medicine, Dr. Wagner, has recently expressed himself anew on the question of unlicensed practitioners. University professors have generally assumed more favorable attitudes toward the new state, but there are still recalcitrants on whom the National Socialist revolution seems to have made no impression. In discussing the relation of biologic medicine to school (regular) medicine, Wagner stated that the procedures of regular medicine should not be disparaged and that it was not intended to substitute for regular medical knowledge and skill the untried therapeutic methods of biologic medicine. Then too there are the biologic fools, the acquisitive knights-errant of conjecture and the visionaries. Nature cure medicine must be housed within the structure of regular medicine. Every doctor should be a biologic physician and the formal title "biologic physician" should be done away with. The unrestricted practice of medicine (*kurierfreiheit*) and National Socialism can never be made to harmonize. Unlicensed practitioners should not be allowed to treat the sick. (This new official attitude represents a virtual reversal of that which until quite recently was so strongly maintained.) After a certain set date no new candidates will be permitted to become healing practitioners (*heilpraktiker*). This will leave from 4,000 to 5,000 such practitioners, none of whom are licensed physicians, still free to use what methods they please.

The foregoing statements, emanating as they do from the highest official medical sources, become the more interesting when it is considered that the number of lay practitioners in the German reich, according to the almanac of health statistics, has continuously increased in recent decades. The official figures are given in the accompanying table.

Moreover, the Heilpraktiker's League recently undertook a purgation of its membership and expelled all those practitioners who refused to demonstrate their qualifications before an examining board. At present the organization numbers around 5,500 members.

It is further interesting to note in this connection that an exposition in honor of the centenary of the popular healing movement in Germany was held at Nuremberg last June under the patronage of the local district leader of the party, Julius Streicher. Simultaneously, an extremely well attended get-together festival of the Nature Cure organizations was held. The exhibits consisted for the most part of charts and mechanical materials, all serving to illustrate how man is disorientated by civilization and how "the mediator between nature and the human organism is the blood." Manufacturers connected with

alcoholic beverages cannot be dispensed to a person under the age of 16 for his own use excepting in the presence of his parent or guardian.

#### Damage to Liver from Caffeine During Pregnancy

For many years the Berlin anatomist Professor Stieve, formerly of Halle, has studied the action of caffeine on the organism. Recently he discussed before the Berlin Medical Society the results of experiments with hepatic alterations in both pregnant and nonpregnant rabbits. The same breed of rabbits was used throughout. Caffeine was administered in quantities of 0.1 Gm. per kilogram of body weight, in the form of coffee or as an aqueous solution. In some instances the experiment was carried on for a number of years. It was demonstrated that the nonpregnant animals tolerated the caffeine, whereas for the pregnant animals it acted as a decided toxin. Stieve noted that habituation to caffeine is possible within certain limits.

Only a part of the pregnant animals that were subjected to the influence of caffeine brought forth young, and the young of the entire litter would be much smaller than normal. Besides, some or all of the litter frequently died in the first week of life. The lethal factor in these cases is not made clear. It was established, however, that the animals were underweight and in a completely asthenic state; the liver contained much fat, but this was true of all the new-born animals irrespective of the administration of caffeine. The brood rabbits seldom died but without exception presented marked hepatic alterations consisting of central and peripheral fatty infiltration in the lobules. Single cells were increased from ten to twelve times their normal size and the nucleus-protoplasm relation was shifted. Kupffer's stellate cells were completely uninvolved in the degenerative processes. At the end of the gestatory period the liver may resemble a field of debris. Even severe disturbances are still reparable. If the young soon die, regenerative processes set in at once in the bile ducts and in the capillaries. Thus it has been proved by these experiments that the liver of pregnant rabbits possesses a distinct hypersensitivity to caffeine. These experimental observations are interesting, but they should not be considered applicable to man until investigated further.

#### Health Service in the Invalid Insurance

As every one knows, there is in Germany in addition to the sick insurance the equally compulsory invalid insurance, which in addition to benefits for the aged maintains a health service. A financial statement of this service for 1935 has just been published. The gratifying increase in the amount of the contributions received made it possible to expend 50,000,000 reichsmarks for this health service during 1935. Cases of illness involving legitimate claims for treatment by the invalid insurance reached a high figure, in excess of 500,000 in 1930, but for 1933 the corresponding figure stood at 124,000. In 1934 the number increased to 153,000. During the last year there was further increase to more than 200,000. Particularly prominent numerically among these cases are epidemic diseases, tuberculosis, venereal diseases, rheumatism and cancer. In addition to funds disbursed for medical service, substantial sums were in certain instances allocated for the prevention of premature invalidism and for the promotion of sanitary conditions. Among other accomplishments there was the extension of direct treatment in sanatoriums, hospitals and convalescent homes to 18,000 children and youths. The national insurance law further provides that the existing insurance institutions of the various German states may invest a part of their capital in community projects. This policy is in line with two principal aims: amelioration of the housing shortage situation and promotion of the fight against tuberculosis, especially by reducing the possibilities of infection. According to the report, 544,000,000 reichsmarks had been invested in this manner by the end of

#### Lay Practitioners in the German Reich

Year	Number of Lay Practitioners	Number per 10,000 Population	Number per 100 Physicians
1876.....	670	0.16	4.9
1887.....	1,713	0.36	10.8
1909.....	4,468	0.70	14.6
1930.....	12,942	2.01	27.4
1934.....	14,266	2.19	30.2

the nature cure movement and several other groups also exhibited at this exposition. Among the dicta that stared one in the face from the walls of the heilpraktiker's exhibit was this: "If medicine were a science, the sick would be in a bad way."

It is a further significant fact that the Paracelsus Institute of Nuremberg, a center of nature medicine, has at its head that same Dr. von Brehmer who not so long ago attained notoriety by his alleged "discovery" of the causative agent of cancer. This "discovery," as previously reported (*THE JOURNAL*, February 1, p. 394), was rejected both by the official opinion of the national bureau of health and by the foremost workers in the field of cancer research. Another of the signs read: "Not brilliant diagnoses—healing results, the patient demands health," and below it there appeared, as illustrative material, four paradoxical enough photographs depicting the consulting room of a heilpraktiker wherein he is shown testing, one after another, the constitutions of his patients and forthwith diagnosing diseases of the eye and evaluating conditions of the hands and nails. He is also portrayed as determining the condition of all the viscera by auscultation. And the foregoing are only a few samples.

From a perusal of the various sections of the new "penal code" that is about to become law, one gleams that so far as the government is concerned the public health is to be better protected henceforward than by these still surviving fantastic methods of quackery. For example, the section entitled "Offenses Against Public Health" provides, among other things, that any person who violates the ordinance governing the dissemination of infectious disease shall be henceforth liable to a jail sentence or even to a penitentiary sentence. Similar severe penalties apply to a person affected with a venereal disease who shall contract a marriage or who shall indulge in coitus. There is also a strict prohibition of any traffic in food products that may be injurious to health. The latter clause is made to cover the unhygienic packing, storage or transport of foodstuffs and is particularly aimed at the prevention of those cases of food poisoning which result not from human agencies but from natural influences such as decomposition. The penalty for supplying alcoholic beverages to drunken persons in a saloon or retail liquor store has been increased to two years imprisonment. Spirituous liquors or beverages containing a large content of such liquors must not be dispensed to persons under the age of 18 years for their own use. Other

1935. During the same year expenditures for the foregoing purposes amounted to 16,700,000 marks; that is, nearly twice the corresponding figure for 1934. In addition, the insurance organizations have indirectly contributed substantial sums for the construction of dwellings. Around 14,100,000 marks went for the purchase of mortgage debentures, and loans of 13,000,000 marks were granted for the construction of homes for working class families.

## BELGIUM

(From Our Regular Correspondent)

Sept. 10, 1936.

### A Dental Program for the Schools

Dr. Watry, who has had experience in the Antwerp schools, recently proposed the following plan for a school dental service: 1. Buccodental disturbances are so prevalent among the school population that only the smallest proportion of pupils remain unaffected by them. Ordinarily the seriousness of these disorders is such that one third of the children are in danger of severe complications with attendant pain and inflammations and hence require immediate treatment. 2. The dental service as it now functions is desperately inadequate in that it tends to minimize the most important two factors in a successful campaign against the scourge of dental caries. The present services attempt, to be sure, to proceed first to a treatment of the lesions presented by child patients. But the incidence of these lesions is so great that, in order fully to discharge its duties, the dental service of any particular school would require for personnel, equipment and expenses generally a sum of money far in excess of that which even the wealthiest and most open-handed administrative body would be disposed to allocate for this purpose. 3. A study from the etiologic point of view of the majority of the buccodental disorders presented by school children leads to a clear enough understanding of the rôle to be assumed by the stomatologist in the dental service as it should be. This concept is based on the following points: (a) Stomatologic inspection in the schools should be founded, above all, on preventive medicine and oral hygiene. The effort must be made to suppress the predisposing and efficient causes of the lesions before the latter have been produced. (b) Special instruction for the child, the parents and the teachers is indispensable. The school physicians should find their most valuable collaborators in the teachers, since the latter group, being versed in pedagogic procedures, are best qualified to indoctrinate the children with the necessary rules of hygiene. It should be further attempted by all possible means to disseminate in the home as well as at school the rudiments of hygiene and to bring the parents to understand the extent of their responsibilities. (c) As the first aspect of the service program is wholly medical in character, it must be entrusted solely to physicians who are specialists in stomatology, and each of these should remain in a close community of ideas and plans with his colleagues of the school general medical service. (d) While the idea of a physician especially trained for school service is admitted, it is out of the question that such a physician should be entrusted with stomatologic examination. Even if a general practitioner exclusively devoted to the school service could acquire an adequate skill in all the specialties, the task imposed on him would, from a stomatologic point of view, be so formidable, so vast, that to grapple successfully with it would be a physical impossibility, were he at the same time to attempt to devote himself with equal energy to other problems, no less important, that would fall to his share. And this holds true even if he were the most energetic, best intentioned doctor in the world. (e) The second or therapeutic phase of the stomatologic service may be introduced according to either of two procedures, each of which possesses its advantages: treatment at the school dental clinic

or at the consulting office of the physician. Whichever method is adopted, the organization of the service must be made to satisfy one important condition: it must place at the disposal of the staff resources commensurate with the needs. Thus each physician will be able comfortably and without danger of being swamped with work, to furnish proper attention to all the children who present dental disturbances, and by "proper attention" is meant such as conforms to all the principles and requirements of modern stomatologic therapeutics.

### Detection of Color Blindness

Research studies of the detection of color blindness have been carried out by Messrs. De Laet and Van de Calseyde among the personnel of the Belgian navy. Dr. Weekers discussed the results of these investigations before the Royal Medical Academy of Belgium. The speaker declared that these data were of real value, especially to physicians whose duty it was to pass on the fitness of candidates and who accordingly had to be conversant with the best examination methods. The results of these recent investigations parallel in many respects the opinion of the leading ophthalmologic authorities and permit the following conclusions: 1. No one test possesses all the advantages. In selective examinations, therefore, a control by one or several methods, the principles of which differ, should be employed. 2. The pseudo-isochromatic plates of Schaaf, of Stilling and of Ishihara are almost coequal in practical value. Those of Ishihara's test are the better developed and the handier; they permit a quicker and more decisive examination than do the others. The number and the diversity of the plates should be constantly increased in order to avoid any attempt at fraud (which consists in recognizing the plates from memory). 3. The worsted skeins used in Holmgren's test are qualitatively rather insufficient excepting in certain cases of dyschromatopsia. On the whole, the skein test furnishes results identical with those obtained by the various plate tests. Holmgren's test is a meticulously well organized and protracted procedure wherein the examiner's evaluation of the candidate's hesitations may, however, constitute a too subjective element, which may prove a source of error. Hence it would seem advisable to allow other tests to replace the Holmgren. 4. Nagel's anomaloscope provides exact and complete indications; as a rule it clinches the settlement of diagnostic problems and guarantees maximal scientific accuracy. There are extremely rare cases on record, however, in which this instrument has failed to reveal a color blindness which was ultimately detected by one of the other tests. 5. Practical tests of any sort whatever are worthless. They are inequitable in that they fail to submit all the candidates to the same difficult conditions. Such tests are lacking in exactitude, for they cannot combine the diverse circumstances that help to determine the sensorial deficiency of the subject. They are further unsafe in that they afford the candidate too great an opportunity to deceive the examiner by the use of supplementary criteria.

### Prevention of Biliary Lithiasis

In the Belgian Society of Pediatrics, Dr. Lorand of Karlovy Vary discussed the possible heritability of biliary lithiasis. Stress should be on avoidance of the causes of the disturbance. These are, on the one hand, cholesteremia, stagnation of the bile and its concentration in the gallbladder; and, on the other hand, excessive intestinal putrefaction, with invasion of the bile ducts by bacilli. According to Solomon and Spearry, cholesterol is chiefly eliminated through the intestinal wall. By measures directed toward the intestine, one can accordingly set up powerful aids to the elimination of this excess of cholesterol and in this the dietary regimen plays the most important part. It should consist of vegetables, salads, fruits and black bread—all nutriment rich in cellulose.

To prevent cholesteremia, the ingestion of animal fats must be avoided with the exception of the milk and butter indispensable to the growth of children. Besides milk, the most suitable and most easily digested fat is olive oil cold from the press. Gustave Singer has explained the cholagogue effect of this oil. It is also an excellent laxative.

A regimen composed of milk, legumes, fruits and black bread together with small quantities of meat and fat not only prevents the formation of an excessive amount of cholesterol but works against constipation, that *primum movens* of all disturbances. Purgations are dangerous, as they inhibit the proper functioning of the intestinal nervous system and of Auerbach's plexus. The best laxative is sodium sulfate with a base of Carlsbad water. According to Loeper and Binet, this acts as a good intestinal disinfectant and in addition it facilitates the elimination of cholesterol.

Lorand considers biliary lithiasis an endocrine disease associated with thyroid or ovarian dysfunction.

## BUDAPEST

(From Our Regular Correspondent)

Sept. 26, 1936.

### International Congress of Crippled Children

Delegates to the third World Congress of the International Society of Crippled Children from all parts of the world were greeted by the Hungarian members of the congress in Budapest from June 29 to July 4. The first day being a holiday, the members visited the orthopedic section of the new St. John Hospital and the sanatorium at Svábhegy. Paul H. King of Detroit, president of the International Society for Crippled Children, gave an address, after which the congress went to inspect the National Home for Crippled Children. It was a pity that in consequence of a great downpour which occurred during the afternoon the members could not inspect the workshops, which, being in the basement, were filled with water.

The formal opening of the congress took place on the 30th in the delegation of the parliament. Nicholas Kozma, minister of internal affairs, as representative of Governor Horthy, expounded the government's point of view on the affairs of the crippled and dealt exhaustingly with their social problems. The twenty-five official delegates of the different nations then gave their greeting speeches. I. Kopits of Budapest detailed the orthopedic principles for the prevention of deformity, supporting his statements with statistics. Professor Klima of Brno, Czechoslovakia, accentuated the necessity of controlling methods that are to direct the further fate of the crippled. Miss Copeland of New York presented accurate data to show that in America a considerable percentage of crippling must be ascribed to accidents in childhood.

The second "clinical day" was held in the lecture room of Professor Verebelyi's clinic, where Professor Gocht of Berlin emphasized the importance of the teaching of orthopedics and made known the methods practiced at Berlin University. Professor Spitzky of Vienna emphasized the importance of special orthopedic hospitals. Professor Spisic of Zagreb, Yugoslavia, emphasized the rôle of the orthopedic clinics for the treatment of crippled children. Zimmer of Budapest summarized the various modern methods of treatment.

The afternoon was devoted to lectures dealing with the hospitalization of the cripple and to the question of how to protect the cripple after the termination of medical treatment and of how to prevent recurrences. The paper read by P. H. Guildal of The Hague, describing the care of the crippled in Holland, made a deep impression on the audience. Dr. Szily, the Hungarian state secretary, opened an exhibition showing the treatment and causes of bodily defects. The huge exhibition will remain open until Christmas.

July 2 the meeting was held jointly with the Hungarian Curative Pedagogic Society. L. Lamy of Paris and H. Radl of Vienna discussed the various methods of curative pedagogy. In the afternoon the chief problem discussed was the training of the cripple for an industrial career. P. Koch of Bratislava, Czechoslovakia, discussed the psychology of the crippled. D. G. Buller, delegate from London, read a paper on the difficulties connected with the placement of crippled persons trained in some trade.

Friday, July 3, the laws for the aid of the crippled were discussed. Every delegate read the pertinent law prevailing in his own country. Miss F. Shirley of Chicago and G. Peto of London pointed out the deficiencies of the laws in each country. In the afternoon the committees submitted their proposals and those of B. Horvath, chief secretary of the congress, for the program of the next congress.

### Survey of Budapest Physicians

The number of physicians in Budapest is 2,697, the rate to the population being 1 to 370 persons. There are 291 women doctors. According to age, there are sixty-one who are beyond 70, while most of them are between 30 and 35. There are 1,561 Christians and 1,137 Jews. Thirty-nine per cent of all physicians, men and women, are not married. Four fifths are specialists and only one fifth are general practitioners. Ninety-four per cent of all of them speak German, 33 per cent French, 29 per cent English, 6.6 per cent Italian and 1 per cent Russian. In Hungary a physician who does not live in his own home is not held to be a good doctor. It is thought that since he does not earn enough to buy a house he is not sought for by the people. Only 57 per cent of the physicians have their own household and 40 per cent keep no servants. In Budapest, living is such that everybody must have at least one servant, and in fact even a shoemaker keeps one. Twenty-six per cent of all physicians receive support from their parents, their relatives and even from their children. Thirty-three per cent of all physicians have no telephone, but, what is much more tragic, 17 per cent do not subscribe to even one medical journal. One fifth of all physicians do not possess instruments that they need to carry with them in their medical practice.

## Marriages

BENJAMIN LAKE NOYES to Estelle Reid Hutchinson, both of Stonington, Maine, in Bangor, October 2.

OSCAR WILLIAM CRANZ, Kinston, N. C., to Miss Mary Margaret Hudson of Mooresville, August 7.

WILLIAM HOGE WOOD JR., Philadelphia, to Miss Anne Cary Moss of Parkersburg, W. Va., September 12.

MALCOLM T. FOSTER, Fayetteville, N. C., to Miss Helen Coggins of Spartanburg, S. C., August 11.

JAMES ALLEN KENNEDY, Boston, to Miss Audrey Eleanor Bradford of Nashville, Tenn., in August.

EUGENE M. KELLEY, Exeter, Pa., to Miss Helen Patricia Carr of Waterbury, Conn., August 5.

JOHN NEWTON BOWDEN, Mobile, Ala., to Miss Emily Lassigne of New Orleans, August 19.

JOHN WYATT DAVIS JR., Lynchburg, Va., to Miss Clementene Goode of Utica, Ky., August 20.

WILLIAM EZRA DE VOL, Cleveland, to Miss Frances Hodgins of Brighton, Mich., August 15.

MILTON H. ERICKSON, Eloise, Mich., to Miss Elizabeth E. Moore of Detroit, June 18.

FRANK A. PRATHER, Runge, Texas, to Miss Effie Rowland of Karnes City, August 8.

ARTHUR L. ENNIS, Maroa, Ill., to Miss Bonnie Regan of Decatur, August 21.

CARL BERNARD LECHNER, Erie, Pa., to Miss Dolores Tellers at Emleto, July 22.

## Deaths

**Oskar Klotz**, professor of pathology and bacteriology at the University of Toronto Faculty of Medicine, died, November 3, of myelogenous leukemia, at his home in Toronto, aged 58. Dr. Klotz was born in Preston, Ont., Jan. 21, 1878. He received his M.B. degree from the University of Toronto Faculty of Medicine in 1902 and the M.D., C.M. degree at the McGill University Faculty of Medicine, Montreal, in 1906. He took graduate work at McGill University, the Rockefeller Institute in New York, and in Germany at the University of Bonn in 1905, the University of Freiburg in 1908 and the University of Marburg in 1914. From 1905 to 1907 he was demonstrator in pathology and bacteriology and from 1907 to 1909 lecturer in pathology at McGill University. From 1905 to 1909 he was assistant pathologist to the Royal Victoria Hospital and pathologist to the Maternity and Alexandra hospitals in Montreal. In 1909 he went to the University of Pittsburgh as professor of pathology and bacteriology, which position he held until the end of 1920, and during this period he was director of the laboratories of the Mercy Hospital, director of the Magee pathology laboratory, and from 1916 to 1919 consulting pathologist to the United States Bureau of Mines. He was professor of pathology at the Faculdade de Medicina, São Paulo, Brazil, from 1921 to 1923, having been appointed by the International Health Board of the Rockefeller Foundation. In 1923 he was appointed professor of pathology and bacteriology at the University of Toronto. He also became director of the pathology laboratories of the Toronto General Hospital and consulting pathologist to the Hospital for Sick Children. Among the positions held by Dr. Klotz on various commissions, councils and societies were: member of the National Research Council of Canada; member of the Yellow Fever Commission of the International Health Board in 1926 and 1928; joint chairman of the committee for Canada of the International Society for Geographic Pathology in 1929. He was a member of the Academy of Medicine of Toronto, president 1935-1936; American Association of the History of Medicine; American Association of Pathologists and Bacteriologists, president in 1919; American Society of Tropical Medicine; Association of Medical Museums, president in 1919; Canadian Medical Association; Ontario College of Physicians and Surgeons; Royal Canadian Institute; Society for Experimental Pathology, president in 1935; and fellow of the American College of Physicians.

**Matthew Augustus De Laney** ♂ Brigadier General, U. S. Army, retired, Washington, D. C., died, November 1, at the Walter Reed General Hospital, aged 62, of pyelonephritis and uremia. General De Laney was born in Waymart, Wayne County, Pa., March 6, 1874. He graduated from the Pennsylvania Normal Institute in 1896 and in 1898 received his medical degree from the University of Pennsylvania Department of Medicine in Philadelphia. In 1902 he graduated from the Army Medical School in Washington. He was commissioned a first lieutenant in the medical corps of the U. S. Army in 1901 and passed through the various grades to that of brigadier general in 1932. He served in the Philippines and in Hawaii, and in 1916 he was with the American forces on the Mexican border. During the World War he was in charge of base hospital number 10 and later was detailed as liaison officer with the British War Office. He was assistant executive in the surgeon general's office from 1919 to 1921. From 1928 to 1931 he served as medical adviser in public health and sanitation to Governor Generals of the Philippines Henry L. Stimson and Dwight F. Davis. In 1931 he became assistant surgeon general. In 1933 he was appointed commandant of the United States Medical Field Service School at Carlisle, Pa., where he served until retired in 1936. General De Laney was a fellow of the American College of Surgeons, the American College of Physicians and the American Public Health Association. From 1909 to 1913, during President Taft's administration, he was White House physician. In 1935 he received an honorary degree of doctor of science from the Dickinson College. General De Laney was awarded the Distinguished Service Medal by the United States and the Order of St. Michael and St. George of England.

**Williams McKim Marriott** ♂ San Francisco, dean and professor of research medicine at the University of California Medical School, died, November 11, of pulmonary embolism following appendiceal abscess, aged 51. Dr. Marriott was born in Baltimore, March 5, 1885. He received a B.S. degree from the University of North Carolina in 1904 and an M.D. degree from Cornell University Medical College, New York, in 1910. He began his teaching career as assistant in chemistry at the

University of North Carolina. Subsequently, until he became professor of pediatrics and later dean at Washington University School of Medicine, he taught at Cornell, Washington University and Johns Hopkins. He was a member of the Council on Pharmacy and Chemistry of the American Medical Association from Sept. 23, 1926, to Jan. 1, 1931, and of the Committee on Foods from May 1, 1929, to Jan. 1, 1931. Dr. Marriott was a member of the American Pediatric Society, the American Academy of Pediatrics, the Association of American Physicians, the American Society for Clinical Investigation, the American Society of Biological Chemists, the American Association for the Advancement of Science, and the Society for Experimental Biology and Medicine and an honorary member of the Harvey Society, and a fellow and formerly vice president and regent of the American College of Physicians. He was on the editorial board of the *American Journal of Diseases of Children* and was the author of "Recent Advances in Chemistry in Relation to Medical Practice" and "Infant Nutrition."

**Gilbert Fitz-Patrick** ♂ Chicago, chairman of the professional committee for medicine, Illinois Department of Registration and Education, died suddenly November 12, aged 63, of coronary thrombosis and chronic myocarditis. Dr. Fitz-Patrick was born in Salem, Ohio, Jan. 19, 1873. He attended the Ohio Northern University in Ada and received his M.D. degrees from the Chicago Homeopathic Medical College in 1896 and the Harvey Medical College, Chicago, in 1899. He was formerly head of the department of obstetrics at the Hahnemann Medical College and Hospital, Chicago. During the World War he was chief of surgery in a base hospital at Camp Gordon, Atlanta, Ga., colonel in the medical reserve corps of the U. S. Army. In 1927 he was a delegate of the Association of Military Surgeons to the Royal Institute of Public Health in Belgium and the following year was a delegate to the first International Congress of Public Health and Hygiene at Cairo, Egypt. He was past president of the Illinois section of the American Society for the Control of Cancer and of the North Side branch of the Chicago Medical Society, and a fellow and governor of the American College of Surgeons. Dr. Fitz-Patrick was attending obstetrician to the Cook County Hospital and the Henrotin Hospital, consulting obstetrician and trustee of the Illinois Masonic Hospital, and member of the visiting staff of the Passavant Hospital.

**Frank Dearborn Bullard**, Los Angeles; University of Southern California College of Medicine, Los Angeles, 1888; member of the Associated Anesthetists of the United States and Canada; past president of the Southern California Medical Association, the Los Angeles County Medical Association and the Southern California Anesthetists Society; formerly secretary of the Los Angeles Clinical and Pathological Society; at one time instructor of ophthalmology at his alma mater; aged 75; died, September 8, of cerebral hemorrhage.

**Theodore Wellington Corwin**, Newark, N. J.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1879; member of the Medical Society of New Jersey; at one time commissioner of public health of the city of Newark; fellow of the American College of Surgeons; aged 79; consulting laryngologist to the Essex County Hospital, Cedar Grove, St. Michael's Hospital and the Hospital of St. Barnabas, where he died, September 1, of cerebral embolism.

**Otis Hardy Maclay** ♂ Chicago; Northwestern University Medical School, Chicago, 1901; member of the American Laryngological, Rhinological and Otolological Society; fellow of the American College of Surgeons; past president of the Chicago Laryngological, Rhinological and Otolological Society; assistant professor of otolaryngology at his alma mater; on the staff of the Wesley Memorial Hospital; aged 63; died, September 5, of coronary thrombosis.

**William Henry Fisher** ♂ Toledo, Ohio; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1891; fellow of the American College of Surgeons; on the staff of St. Vincent's Hospital; president of the Academy of Medicine of Toledo, 1900-1901; formerly professor of clinical surgery at Toledo Medical College; aged 66; died suddenly, September 6, of coronary thrombosis.

**Effa V. Davis** ♂ Chicago; Woman's Medical College, Chicago, 1891; formerly assistant clinical professor of obstetrics at her alma mater and Rush Medical College; owner of the Chicago Maternity Hospital; on the staffs of the Women and Children's Hospital and the American Hospital; past president of the Chicago Council of Medical Women; aged 73; died, October 28.

**Karl Ernest Poetker**, Portsmouth, Ohio; University of Cincinnati College of Medicine, 1923; member of the Ohio State Medical Association and the Associated Anesthetists of the United States and Canada; formerly city bacteriologist for the city board of health; on the staff of the Portsmouth General Hospital; aged 38; died suddenly, September 21, of heart disease.

**Joseph T. De Grange**, New Orleans; Tulane University of Louisiana Medical Department, New Orleans, 1888; member of the Louisiana State Medical Society; for many years physician for the city fire department; chairman of the first aid committee of the local chapter of the American Red Cross; aged 71; died, September 1, of coronary thrombosis.

**Camille Peter Brown** \* New Orleans; Tulane University of Louisiana Medical Department, New Orleans, 1912; at one time adjunct professor of gynecology, New Orleans Polyclinic; formerly chief surgeon of the Illinois Central Hospital; aged 51; died, September 6, in a hospital at St. Louis, of brain tumor and carcinoma of lymph glands of the neck.

**Clark Burnham**, Brooklyn; Hahnemann Medical College of Philadelphia, 1881; member of the Medical Society of the State of New York; formerly on the staffs of the Cumberland Hospital and the Skene Sanitarium; aged 80; died, September 2, in the Mount Vernon (N. Y.) Hospital, of carcinoma of the prostate; died after an operation for prostatic obstruction.

**William Karg Gray** \* Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1905; formerly assistant professor of otolaryngology at the Loyola University School of Medicine; for many years on the staff of St. Anne's Hospital; aged 58; died, September 11, at his home in Oak Park, Ill.

**Milton Abe Given** \* East Chicago, Ind.; Northwestern University Medical School, Chicago, 1911; served during the World War; formerly health officer of East Chicago; on the staff of St. Catherine's Hospital; aged 47; died, September 13, in the Michael Reese Hospital, Chicago, of injuries received in an automobile accident.

**Robert Myers Donald**, Moorhead, Miss.; Memphis (Tenn.) Hospital Medical College, 1904; also a druggist; member of the Mississippi State Medical Association; served during the World War; past president and secretary of the Delta Medical Society; aged 54; died, September 9, in the King's Daughters' Hospital, Greenville.

**Henry Franklin De Wolf** \* Little Rock, Ark.; University of Kansas School of Medicine, Kansas City, 1925; associate professor of dermatology, University of Arkansas School of Medicine; served during the World War; aged 39; died, September 4, in the Baptist State Hospital, of a self inflicted bullet wound.

**Robert Hamilton Woodruff**, Hackettstown, N. J.; Hahnemann Medical College and Hospital of Philadelphia, 1899; formerly member of the state legislature and local board of health; for many years school physician; aged 61; died, September 1, in the Memorial Hospital, New York, of pneumonia.

**James Morehead Whitfield**, Richmond, Va.; University of Virginia Department of Medicine, Charlottesville, 1887; assistant surgeon in the U. S. Navy in 1890; for many years city coroner; in 1904 member of the city board of health and in 1907 city chemist; aged 67; died, September 4, of nephritis.

**Samuel McClary III** \* Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1903; formerly assistant professor of surgery at his alma mater; for many years on the staff of the American Oncologic Hospital; aged 59; died, September 20, in the Presbyterian Hospital.

**Arnold Henry Bullwinkel**, Brooklyn; Long Island College Hospital, Brooklyn, 1913; member of the Medical Society of the State of New York; aged 47; on the urologic staffs of the Swedish Hospital, Kings County Hospital and the Lutheran Hospital, where he died, September 3, of pneumonia.

**James Battelle McMillen** \* Somerton, Ohio; Starling Medical College, Columbus, 1901; member of the board of education and county board of health; aged 66; died, September 12, in the Community Hospital, Barnesville, of injuries received in an automobile accident.

**Charles Carson Deal**, Auburndale, Fla.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1911; aged 59; died, September 15, in the Morrell Memorial Hospital, Lakeland, of injuries received when an automobile in which he was riding overturned.

**Charles A. Carter**, Indianapolis; Medical College of Indiana, Indianapolis, 1897; was associated with the city and state boards of health for many years, serving as vital statis-

tician for the state board of health for fourteen years; aged 72; died, September 5.

**John Edmund Bryant**, Haverhill, Mass.; Dartmouth Medical School, Hanover, N. H., 1901; member of the Massachusetts Medical Society; past president of the Essex North District Medical Society; aged 60; died, September 18, of angina pectoris.

**Albert Henry Smith**, Philadelphia; Medico-Chirurgical College of Philadelphia, 1888; formerly a member of the division of epidemiology of the state board of health; also a druggist; aged 83; died, August 26, of chronic parenchymatous nephritis.

**Louis J. Sintzel**, Northbrook, Ill.; St. Louis College of Physicians and Surgeons, 1899; for many years health officer of the village of Northbrook; attending physician to St. Anne's Home, Techny; aged 71; died, August 5, of carcinoma of the bladder.

**Charles Forrest Seaton** \* Williamsport, Pa.; Jefferson Medical College of Philadelphia, 1908; for many years school physician; on the staff of the Williamsport Hospital; aged 53; died, September 7, when he jumped from a bridge into a creek.

**Louis Rachlin** \* Brooklyn; New York Homeopathic Medical College and Flower Hospital, New York, 1916; aged 51; on the staff of the Beth Moses Hospital, where he died, September 7, of injuries received when struck by an automobile.

**William Fletcher Stone** \* St. Albans, N. Y.; University of the City of New York Medical Department, 1890; formerly instructor in and demonstrator of anatomy at Cornell University Medical College, New York; aged 73; died, August 14.

**Homer Erastus Rich** \* Vernal, Utah; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1910; served during the World War; aged 50; died, September 24, of heart disease.

**Francis L. Borglum**, Prescott, Ariz.; John A. Creighton Medical College, Omaha, 1902; for many years connected with the Veterans Administration Facility, Fort Bayard, N. M.; aged 56; died, September 20, of angina pectoris.

**Henry Charles Luck**, Cleveland; Cleveland College of Physicians and Surgeons, Medical Department of the University of Wooster, 1894; served during the World War; aged 66; died, September 10, in the Lakeside Hospital.

**William Downing Groff** \* Nortonville, Kan.; Kansas Medical College, Medical Department of Washburn College, Topeka, 1898; aged 70; died, September 19, in the Williamsport (Pa.) Hospital, of cerebral hemorrhage.

**Thomas Rene Hyatt**, Topeka, Kan.; Kansas Medical College, Medical Department of Washburn College, Topeka, 1905; member of the Kansas Medical Society; aged 79; was found dead, August 27, of heart disease.

**Thaddeus Alonzo Casey**, Guntersville, Ala.; Vanderbilt University School of Medicine, Nashville, Tenn., 1891; member of the Medical Association of the State of Alabama; aged 75; died, September 6, in Montevallo.

**Charles A. Snow**, Cleveland; Cleveland College of Physicians and Surgeons, Medical Department of the University of Wooster, 1892; aged 83; died, August 1, of arteriosclerosis, arthritis, nephritis and uremia.

**Luke Henry Crawshaw**, Pocatello, Idaho; St. Louis University School of Medicine, 1909; member of the Idaho State Medical Association; aged 56; died, September 5, in a local hospital, of acute appendicitis.

**Anne Young**, Philadelphia; Woman's Medical College of Pennsylvania, Philadelphia, 1898; formerly a medical missionary; aged 66; died, September 30, in the Presbyterian Hospital, of rheumatic heart disease.

**Ivyl Clare Bedwell**, Olive View, Calif.; University of Nebraska College of Medicine, Omaha, 1923; on the staff of the Olive View Sanatorium; aged 40; died, August 25, of acute myelogenous leukemia.

**Ralph Bernard Snyder**, Schoolcraft, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1912; aged 48; died, September 8, in the Bronson Methodist Hospital, Kalamazoo.

**Charles Newton Cutler** \* Plainfield, N. H.; Harvard University Medical School, Boston, 1898; member of the Massachusetts Medical Society; aged 61; died, September 5, of coronary thrombosis.

**Wellington James Conover**, Evart, Mich.; Milwaukee Medical College, 1900; served during the World War; village health officer; aged 58; died suddenly, September 15, of coronary thrombosis.

**William Wood Ritchey**, Kansas City, Mo.; University Medical College of Kansas City, 1895; St. Louis College of Physicians and Surgeons, 1896; aged 73; died, September 12, of heart disease.

**Charles R. Huckabay**, Idabel, Okla.; University of Dallas (Texas) Medical Department, 1901; member of the Oklahoma State Medical Association; aged 64; died, August 20, of coronary occlusion.

**Byron Charles Leavitt**, Duxbury, Mass.; Harvard University Medical School, Boston, 1887; member of the Colorado State Medical Society; aged 77; died, August 18, of cerebral hemorrhage.

**Waldo Henry Sanford**, New York; Albany (N. Y.) Medical College, 1896; served during the World War; aged 64; died, September 15, in the Harkness Pavilion, Columbia Medical Center.

**Alejandro Ruiz Soler**, San Juan, P. R.; University of Maryland School of Medicine, Baltimore, 1906; member of the Medical Association of Puerto Rico; aged 55; died, September 23.

**Alvan Lothair Chapman**, Hermanville, Miss.; Tulane University of Louisiana Medical Department, New Orleans, 1905; veteran of the Spanish-American War; aged 60; died, September 15.

**Samuel Cleveland Seay**, Birmingham, Ala.; Jefferson Medical College of Philadelphia, 1908; aged 52; died, September 12, in the Norwood Hospital, of cirrhosis of the liver.

**Martin George Sullivan**, Winchendon, Mass.; College of Physicians and Surgeons, Baltimore, 1903; member of the Massachusetts Medical Society; aged 57; died, September 14.

**Alexander Lewis Grant**, Los Angeles; University of Edinburgh (Scotland) Faculty of Medicine, 1912; aged 56; died, August 8, of intestinal obstruction and chronic myocarditis.

**Edward Joseph Farrell**, Berwyn, Ill.; Northwestern University Medical School, Chicago, 1907; health officer of Berwyn; aged 53; died, August 9, in the Berwyn Hospital.

**John Stefansson**, Winnipeg, Manit., Canada; Manitoba Medical College, Winnipeg, 1911; aged 57; died, September 29, in the Winnipeg General Hospital, of lobar pneumonia.

**Robert Scott Miles Jr.**, Tacoma, Wash.; Minneapolis College of Physicians and Surgeons, 1903; veteran of the Spanish-American War; aged 60; died, August 10.

**Emery Thompson** Ⓢ Holden, Mo.; American Eclectic Medical College, Cincinnati, 1893; past president of the Johnson County Medical Society; aged 68; died, August 9.

**Martin Wesley Page**, Denver; Western Reserve University Medical Department, Cleveland, 1886; aged 74; died, September 6, in the Mercy Hospital, of cerebral hemorrhage.

**Sulveanus S. Gabriel**, Piqua, Ohio; Baltimore Medical College, 1893; member of the Ohio State Medical Association; aged 76; died, September 8, of coronary disease.

**Lawrence Haddon**, Haddonfield, Va. (licensed in Virginia under the Exemption Clause of 1895); Civil War veteran; for many years postmaster; aged 92; died, August 4.

**William Albert Landgrebe** Ⓢ Cleveland; Cleveland College of Physicians and Surgeons, Medical Department Ohio Wesleyan University, 1909; aged 55; died, August 14.

**Jessie Wilhelmine Robertson**, Tewksbury, Mass.; Tufts College Medical School, Boston, 1911; on the staff of the State Infirmary; aged 50; died, August 5, in Boston.

**James Bennett Crane** Ⓢ Kilgore, Texas; Tulane University of Louisiana Medical Department, New Orleans, 1911; aged 54; died, September 12, of heart disease.

**Jesse S. Flora**, Kokomo, Ind.; Eclectic Medical Institute, Cincinnati, 1892; aged 66; died, September 14, of cerebral hemorrhage and cardiovascular renal disease.

**Abram R. Setzer**, Richland, Ky.; Kentucky University Medical Department, Louisville, 1906; aged 76; was killed, September 10, when he was struck by a train.

**Daniel J. Carey**, Chicago; College of Physicians and Surgeons of Chicago, 1895; aged 61; died, September 24, of cholelithiasis, pneumonia and heart disease.

**Owen James Bready**, Cleveland; Cleveland Homeopathic Medical College, 1903; aged 71; died, September 5, in the Lakeside Hospital, of carcinoma of the stomach.

**George Henry Davis**, Le Roy, N. Y.; University of Buffalo School of Medicine, 1901; aged 60; died, September 18, of chronic nephritis and coronary thrombosis.

**Clarence Morgan Petty**, Ida, La.; Memphis (Tenn.) Hospital Medical College, 1906; aged 54; was instantly killed recently when struck by an automobile.

**J. M. Willson Cannon**, Pocatello, Idaho; Hahnemann Medical College of Philadelphia, 1878; aged 85; died, September 6, in a local hospital, of heart disease.

**Bernard Cheston Goldberg**, Baltimore; Southern College of Medicine and Surgery, Atlanta, Ga., 1913; aged 52; died, August 31, of coronary thrombosis.

**Charles Milton Ford**, Kew Gardens, N. Y.; University of the City of New York Medical Department, 1888; aged 73; died, September 4, of heart disease.

**Joel Hudson Smith**, Jenkinjones, W. Va.; Medical College of Virginia, Richmond, 1933; aged 33; died, August 20, in the Bluefield (W. Va.) Sanitarium.

**Elinor Edgar**, New York; Cornell University Medical College, New York, 1933; aged 41; was found dead, September 12, of gas poisoning, self administered.

**John Hunting Cobb**, Binghamton, N. Y.; Albany (N. Y.) Medical College, 1891; aged 71; died, September 7, of diabetes mellitus and chronic nephritis.

**Joseph Thomas Sutton**, Milburn, Ky.; Missouri Medical College, St. Louis, 1863; aged 95; was found dead in bed, August 2, of arteriosclerosis.

**Samuel Cloyd Vaughn**, Patton, Mo.; St. Louis College of Physicians and Surgeons, 1902; aged 64; died, August 15, in a hospital at Cape Girardeau.

**Adam William Feltmann**, Chicago; Jenner Medical College, Chicago, 1896; aged 72; died, September 3, of myocarditis and chronic nephritis.

**John Graham**, Pembroke, Ont., Canada; McGill University Faculty of Medicine, Montreal, Que., 1886; died, August 7, in the Ontario Hospital.

**Jefferson Warren Hawthorne**, Springfield, Mass.; University of Vermont College of Medicine, Burlington, 1896; aged 63; died, August 29.

**Clarence S. Robinson**, Dowagiac, Mich.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1889; aged 77; died, September 5.

**George Frederick Maddock**, Flushing, N. Y.; University of the City of New York Medical Department, 1889; aged 73; died in September.

**Oliver Angus McCall**, East Aurora, N. Y.; University of Buffalo School of Medicine, 1912; aged 56; died, August 7, of rectal abscess.

**Anna G. Sedam-Benner**, Cincinnati; Presbyterian Hospital and Woman's Medical College, Cincinnati, 1895; aged 72; died, August 15.

**Howard Malcolm Byall** Ⓢ Montpelier, Ohio; Rush Medical College, Chicago, 1884; aged 77; died, September 5, of angina pectoris.

**Isidor Davidson**, New York; Columbia University College of Physicians and Surgeons, New York, 1904; aged 55; died, September 18.

**Raymond D. Pearson**, Monroe, N. C.; Medical College of the State of South Carolina, Charleston, 1922; aged 39; died, September 14.

**John B. Bates**, Verdigre, Neb.; College of Physicians and Surgeons, Keokuk, Iowa, 1890; aged 76; died suddenly, August 22.

**Silas Nathaniel Jackson**, Leavenworth, Kan.; Meharry Medical College, Nashville, Tenn., 1894; aged 66; died, August 4.

**James W. Greenwood**, Fort Worth, Texas; Dallas Medical College, 1903; aged 63; died, August 11, in a hospital at Dallas.

**Hill Everett Pearce** Ⓢ Tarrant, Ala.; Birmingham Medical College, 1908; aged 58; died, September 1, of heart disease.

**Arthur Dalton Smith**, Mitchell, Ont., Canada; Trinity Medical College, Toronto, 1882; aged 77; died, August 30.

**Frank Walter Burns**, Pomona, Calif.; College of Physicians and Surgeons of Chicago, 1896; aged 65; died, August 28.

**Lee C. Carder**, Hull, Ill.; College of Physicians and Surgeons, Keokuk, Iowa, 1891; aged 83; died, September 5.

**Edgar L. Walker**, Gladewater, Texas; Eclectic Medical Institute, Cincinnati, 1889; aged 67; died, August 28.

**Mark Dunning**, Orangeville, Ont., Canada; University of Toronto Faculty of Medicine, 1891; died, August 22.

## Correspondence

### HEMOLYTIC JAUNDICE—SPHEROCYTIC ICTERUS

*To the Editor:*—It is well known that many conditions can produce jaundice through an excessive destruction of erythrocytes; i. e., a "hemolytic jaundice" in the general sense. Also a clear cut hereditary disease, "chronic hemolytic jaundice with splenomegaly," has been recognized for many years, whether in the congenital form of Chauffard-Minkowski or the so-called acquired type of Hayem-Widal. This disease has unusually concise diagnostic criteria, especially the increased fragility of the erythrocytes in hypotonic salt solution, and small erythrocytes (microcytes), which tend to a more spherical form than normal. As Russell Haden has pointed out, this inherited change in form underlies the increased fragility. The disease has long been known under several, often cumbersome, names, and this is perhaps the reason it is often colloquially spoken of by the confusing, more general, term "hemolytic jaundice." Allen Whipple, for instance, has found it necessary in his Combined Spleen Clinic to separate it from less specific forms by the term "typical hemolytic jaundice." It therefore seems desirable to substitute a more illuminating term, as short as possible, and I suggest "spherocytic jaundice," which also has the advantage of an etiologic implication; "jaundice" rather than "anemia" because, as Chauffard pointed out, these patients may not be anemic and may even be more jaundiced than sick. "Spheroidocytic" would be the more accurate, as the cells are far from true spheres; however, recommendation of the shorter term can take advantage of one of the dictionary definitions of the sphere as "a rounded body approximately a sphere." Therefore, as "spherocytic jaundice" is a less unwieldy term, and as the word "spherocyte" already appears in at least one medical dictionary, it seems the preferable one to use. I do not know of either of these terms having been previously proposed; they may well have been, however, as they seem rather obvious. If so, I can only apologize to the true originator for an unintentional plagiarism.

E. B. KRUMBHAAR, M.D., Philadelphia.

### CINCINNATI COMMITTEE ON DIABETES

*To the Editor:*—I have just seen an editorial in THE JOURNAL (October 31, p. 1473) about the New York Diabetes Association. In May 1935 we organized the Diabetic Committee of the Public Health Federation with the approval of the Academy of Medicine of Cincinnati.

We picked a few men from all the hospitals and insurance companies consisting of a committee of about twenty and had a few informal meetings and then finally organized and I will give you a copy of our set up. Since our organization we have been very active and have received \$1,100 from two insurance companies to assist us in carrying out our programs.

Last fall we invited Dr. Joslin here and he spoke before the general public in one of the local hotels in the afternoon and before the Academy of Medicine in the evening. The afternoon attendance was phenomenal, as there were over 750 lay people at the meeting. In addition to this we have had a girl telephoning all the doctors in metropolitan Cincinnati to find out the number of diabetic patients in this area and I think we have a pretty good idea; we also have had very extensive newspaper publicity and have run over twenty articles in the newspaper about diabetes. This has all been done under the sponsorship of the Academy of Medicine and the Public Health Federation and there have been no criticisms from the profession. This fall we plan to make a critical analysis of the causes of death for 1935 in Cincinnati of all the patients with diabetes who

have died and we are trying to get up a standard history sheet for all the hospitals so that after a five year period we may be able to analyze our data. We also are cooperating with the Cincinnati Better Business Bureau and think we have excluded many of these fake lectures on diet from the public halls of Cincinnati and are going to be on an active campaign against stores who are selling special foods for the diabetic illegitimately.

At the public meeting and at the scientific meeting in the evening, we had a very large exhibit. This year we plan to have more publicity and undertake another public and scientific session. I hope that this note may be of interest to you.

CECIL STRIKER, M.D., Cincinnati.

Chairman of the Committee on Diabetes  
of the Public Health Federation.

### SALMONELLA SUIPESTIFER NOT THE CAUSE OF HOG CHOLERA

*To the Editor:*—*Salmonella suipestifer* is not the cause of hog cholera nor is hog cholera communicable to man. Belief to the contrary excites unnecessary anxiety in communities afflicted with outbreaks of hog cholera. The situation has been aggravated by a recent article in THE JOURNAL (August 1, p. 331) entitled "*Salmonella Suipestifer* Bacteremia." In the introductory paragraph it was stated that the *Salmonella suipestifer* organism is "known to be the cause of hog cholera," and that there is "increasing evidence of its definite relationship to human disease." That such an etiologic error with respect to hog cholera should represent the individual beliefs of the three co-authors of the article, and, in addition, should pass your editorial scrutiny, indicates a widespread misapprehension concerning this disease.

Hog cholera is caused by a filtrable virus—a discovery made more than thirty years ago by scientists of the federal Bureau of Animal Industry. The virus is highly species specific. Aside from some dubious results with guinea-pigs, it has never been propagated in species outside the family Suidae.

*Salmonella suipestifer* is commonly a secondary invader in hog cholera, so commonly, in fact, that it was earlier supposed to be the causative agent and it was accordingly first named *Bacillus cholerae-suis*. The swine disease produced by it is salmonellosis. Outbreaks of salmonellosis in swine, whether or not associated with hog cholera, have not appeared to induce an unusual incidence of gastro-enteric, pulmonic or septic infections among persons who handle, or dwell in proximity to, the affected animals.

JOHN R. MOHLER, V.M.D., D.Sc., Washington, D. C.  
Chief, Bureau of Animal Industry,  
U. S. Department of Agriculture.

### LONG SERVICE FOR ARTIFICIAL EYE KEPT IN SITU

*To the Editor:*—Some years ago a patient of mine who lost his eye in the Civil War came in to see me with the artificial eye broken in the socket. It had grown fast and I had to dissect it loose in its entirety. The glass was porous and badly corroded. I asked the patient how long since the eye had been taken out. He thought for a short time and answered that the eye had not been out of its socket even at night for more than twenty-five years.

I do not think this is a record but at any rate it is a long time to wear an artificial eye.

WILFRID HAUGHEY, M.D., Battle Creek, Mich.

## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

### PERMANENT WAVE SOLUTION AND DERMATITIS

*To the Editor:*—A white woman, aged 23, has been a beautician for five years. Three months ago an eczematous dermatitis developed on the medial and lateral aspects of the fingers and one adjacent to the thenar eminence over the wrist joint. The lesions are typically papular, weeping, intensely itching and minutely ulcerating. She presents evidence of a high carbohydrate diet, recent contact with horses, symptoms of a constitutional hepatic dysfunction and a constantly alkaline urine. Thus far the entire local preparations have been exhausted with no effect, including x-ray therapy. At the present time I am employing dicalcium phosphate wafers and dilute hydrochloric acid and am recommending rubber gloves while the patient is at work, coupled with a diet of carbohydrate 60, protein 60, fat 120. What is contained in the commercial permanent wave solutions? If the dermatitis is due to this solution, what could have gone wrong constitutionally after five years of employment? What beneficial effects could I expect by removing her from her employment for one month? What are your suggestions in a case of this nature? There is no evidence of tuberculosis, syphilis or scabies. Please do not publish name.

M.D., Wisconsin.

**ANSWER.**—The commercial permanent wave solutions contain, among other things, gum tragacanth, linseed gum, quince seed gum, acacia, Karaya gum (a white or gray powder obtained from the sap of a tree grown chiefly in India), boric acid, sodium, potassium and ammonium carbonates, alcoholic keratin, petrolatum and waxes. These substances usually exist in various combinations, depending on the type of preparations used. The Karaya gum is usually employed in the less expensive solutions, the gum tragacanth in the medium priced groups, and the quince seed in the higher priced solutions, along with the other ingredients.

To determine the relationship of the solution to the dermatitis in question, information as to the qualitative composition of the solution used should be obtained from the manufacturer, and patch and scratch tests done with the solution and its respective constituents to determine the offending substances. It is possible that this solution might produce the dermatitis even after five years of employment. The use of the same solution over this period could produce a sensitivity by its cumulative effect as a result of sensitivity developing from a succession of repeated minimal irritations ultimately producing a manifest sensitization in the form of the dermatitis.

Another factor in the production of the dermatitis may reside in the perfume or scent used in some of these preparations. The composition of these perfumes may vary from time to time in different batches of the same preparation and this may have to be investigated, if the preparation is scented.

The contributory rôle of certain foods in producing a sensitive soil and rendering the skin vulnerable to external irritants must also be considered.

If the permanent wave solution is the sole agent in the production of the dermatitis, one should expect a complete recovery by removal of the patient from her employment for one month.

In a case of this type, the patient should first be tested as suggested. The removal of the individual from all contacts that might produce irritation may require a change of occupation. The use of soothing local therapy should be instituted. X-rays, if used at all, should be employed only in cautious, fractional doses. Dicalcium phosphate and vitamins A and D are also of value. The protection of the parts with rubber gloves, if the patient continues work, is excellent. The rôle of foods as agents in the production of an allergic background should be ruled out by appropriate skin testing or elimination diets.

### PECK TEST IN PURPURA

*To the Editor:*—Kindly send me whatever information you have in regard to the Peck test for diagnosis of purpura haemorrhagica.

E. J. WEXLER, M.D., Chicago.

**ANSWER.**—The Peck test for purpura haemorrhagica consists in the intradermal injection of from 0.1 to 0.2 cc. of titrated snake venom solution. Equal amounts of physiologic solution of sodium chloride are injected intradermally at another comparable site. The test should be read at the end of one hour. The production of a purpuric lesion at the site of injection

within a one hour period and a negative control indicates a positive test. An objection to this test may be raised on the grounds that in active and severe cases of purpura haemorrhagica the saline control may be positive, because, in the presence of increased capillary fragility, distention of the skin by physiologic solution of sodium chloride may produce a purpuric lesion. Peck, however, stresses the importance of the test in prognosis (prognostic venom reaction) since it permits a quantitative and qualitative estimation of capillary fragility over a period of time. He has found that patients having a therapeutically induced or a spontaneous remission show a reversal from a positive test to a negative one. Many cases in which the test has been tried have shown a reversal of positive to negative before other criteria of improvement have become apparent. Peck has found that patients with chronic thrombocytopenic purpura who are positive before splenectomy will show a reversal a few hours after operation if the patient has had a favorable result from the operation.

The snake venom used in the test is available through Lederle Laboratories, New York. It is important that standardized moccasin venom (*Ancistrodon piscivorus*) be used. Each 0.1 cc. represents one hemorrhagin unit and different venoms may vary from this standard. The hemorrhagin unit is determined by the amount of moccasin venom necessary to produce hemorrhages in the vascular network of a 3 day old chick embryo.

The test is new and will require more study under varying conditions before its ultimate value can be definitely decided. Peck and his colleagues are doing this and their results will soon be available in medical literature.

### TREATMENT OF SYPHILIS

*To the Editor:*—A man, aged 35, was originally treated for syphilis at the Marine Hospital, San Francisco, in January 1932. At that time he had a genital lesion from which a positive darkfield examination for spirochetes was obtained. The blood Wassermann reaction was repeatedly negative. From Jan. 1, 1932, to May 23, 1934, he received thirty-six injections of arsenicals and thirty-eight injections of a bismuth compound. He was advised to discontinue treatment but to have a Wassermann test made every six months for five years. Jan. 12, 1935, he reported another genital lesion, and again spirochetes were found on darkfield examination. There was no history of exposure outside the family. A diagnosis of primary syphilis was made. There is a possibility that this lesion was merely a recurrence, but the adequate treatment received, the repeatedly negative Wassermann reactions and the negative Wassermann reaction at this time point strongly to reinfection. From Jan. 25 to Nov. 22, 1935, he received a total of 4 Gm. of neoarsphenamine in twelve injections and 4 Gm. of a bismuth compound in twenty injections. During this course of treatment the blood Wassermann reaction was repeatedly negative. However, in July 1935 a spinal puncture was done and was entirely negative except for a gold curve suggestive of cerebrospinal syphilis, 0000111000. Reexamination of the spinal fluid April 9, 1936, gave a gold curve of 223343000, cell count 0, globulin normal, Wassermann reaction negative. Will you kindly outline the future treatment for this case? There are no cardiovascular or neurologic symptoms at present. If printed in THE JOURNAL, kindly omit name.

M.D., California.

**ANSWER.**—As the inquirer remarks, the second lesion of Jan. 12, 1935, sounds much like reinfection. The statement that there was no exposure outside the family implies that the patient is married. In this connection his wife should be examined immediately for syphilis, if this examination has not already been made.

His treatment since the reinfection (or relapse) has consisted of thirty-two injections given over a period of forty-three weeks; i. e., it has not been absolutely continuous. The dosage of neoarsphenamine employed (an average of 0.33 Gm. per dose) is inadequate for the treatment of early syphilis.

The gold curve obtained at the spinal fluid examination in July 1935 is entirely negative and of no significance; the curve obtained in April 1936 is abnormal but, in the absence of other abnormalities in the spinal fluid, an isolated change in the colloidal curve cannot be interpreted without further observation. The colloidal gold reaction is much more variable and more subject to laboratory error than the colloidal mastic or benzoin reaction.

The future treatment of this case should proceed exactly as if the patient had uncomplicated seronegative primary syphilis, and in accordance with the treatment outline suggested by the Cooperative Clinical Group (Stokes and others, THE JOURNAL, April 21, 1934, p. 1267). This treatment outline employs the continuous (no rest periods) use of alternating courses of an arsphenamine and a bismuth compound. If neoarsphenamine is used, each course should include from eight to ten weekly injections in a dose of from 0.6 to 0.9 Gm. These courses of neoarsphenamine should be separated by somewhat

shorter courses of a bismuth compound than have heretofore been used; e. g., ten weekly injections of bismuth salicylate 0.2 Gm. each. This scheme of treatment should be kept up for the next six months, at the end of which time the spinal fluid should be reexamined, preferably in more than one laboratory, and two or more different colloidal curves should be utilized. If the spinal fluid is actually abnormal at the next examination, the treatment outline must be changed in accordance with the condition found at that time. If, however, it is normal, as is probable, the outline of treatment suggested should be continued for an arbitrary minimum of one year from this point.

URINARY HISTIDINE TEST FOR PREGNANCY

To the Editor:—I am one of the many young practitioners who have sought outlying towns without hospital facilities and who subsist on small fees largely derived from underprivileged patients. I read your editorial (*THE JOURNAL*, June 27, 1936, p. 2340) on urinary histidine in the diagnosis of pregnancy. I purchased an ounce ampule of Merck's Reagent Bromine, and I wish to use the test, for whatever it may be worth. Would you kindly send me a protocol for this test, especially covering a simple qualitative method? Any information concerning a method of preserving bromine over a period of years would be valuable. I am keeping mine in a glass-stoppered bottle in the refrigerator to begin with.

G. J. POTTER, M.D., Clewiston, Fla.

ANSWER.—Voge in 1929 reported a very simple test for histidine in the urine of pregnant women. He treated 2.5 cc. of urine with 1 cc. of bromine water. A saturated aqueous solution of bromine (bromine water) contains about 3 parts of bromine in 100 of water. This solution is diluted with twice its volume of water for the test. The mixture of 2.5 cc. of urine with 1 cc. of the diluted bromine water is brought to the boiling point. A positive reaction is indicated by a pink or orange red coloration which rapidly fades. In a negative reaction the original yellow remains. Voge found a positive reaction in twenty-four of twenty-five urine specimens that gave a positive Aschheim-Zondek test. In two cases the Aschheim-Zondek test was negative and the histidine test positive, and in thirty-three other cases both tests were negative. Voge found that normal urine does not give this test, the addition of histidine causing a positive reaction. One objection to this simple test is the often rapid disappearance of the red, so that it is difficult to decide the result. Dark colored urines may make the reading difficult.

Kapeller-Adler in 1933 described a specific colorimetric test for histidine too complicated for the average physician's office. To 2 cc. of urine a 1 per cent bromine solution in 33 per cent acetic acid is added drop by drop until a weak yellow persists. After ten minutes 2 cc. of an ammonia-ammonium carbonate mixture (2 parts of concentrated ammonia plus 1 part of 10 per cent ammonium carbonate solution) is added. This is heated in a water bath for five minutes. A deep blue-violet appears, which increases on cooling. After ten minutes a colorimetric determination can be made, a 1:1,000 standard histidine solution being used. Care must be exercised in adding the bromine solution to avoid an excess. For this purpose a potassium iodide starch solution is used.

Földes in 1935 described a modified Kapeller-Adler test, as follows:

To 5 cc. of urine is added in portions of 0.1 cc. a 2.5 per cent bromine solution in 20 per cent acetic acid. The urine is shaken after each addition of 0.1 cc. of bromine solution. When an orange yellow to orange red appears the bromine solution is added until the color reaches its maximum intensity. The reaction may be recorded as from 1+ to 3+. If no color appears, the test is negative. With this test the histidine reaction increases with rise in the specific gravity of the urine.

Kapeller-Adler and Schiller found that the quantity of histidine in the urine varies in the same and in different gravid women. It is greater in amount in the second half of pregnancy than in the first. It is increased by a high protein diet. The histidine was found to disappear on the third day post partum. In nonpregnant women and in males, histidine given by mouth is decomposed and does not appear in the urine. The histidine in the urine of pregnant women is partly endogenous and partly exogenous.

The best manner in which to preserve bromine is in a glass-stoppered bottle under a layer of water. The bromine is heavy and remains below the water, which prevents its volatilization. It can be removed as needed by placing the end of a pipet below the water.

The references are:

Voge, C. I. B.: *Brit. M. J.* 2: 829 (Nov. 2) 1929.  
Kapeller-Adler, Regina: *Biochem. Ztschr.* 264: 131 (Aug.) 1933.  
Kapeller-Adler and Schiller: *Klin. Wchschr.* 14: 1790 (Dec. 7) 1935.  
Földes, Franz: *Biochem. Ztschr.* 283: 199 (Jan.) 1935.

WHISPER TEST OF HEARING

To the Editor:—Would you please tell me if there is any argument as to the method of testing hearing both as to distance 15, 20 and 25 inches and whisper, forced whisper or spoken voice? The audiometer is, I know, the most accurate. I have occasion to do considerable work in this line and find some difficulty in the variance of tests used. Might I also have a list of the various tests of hearing and references?

M.D., Ontario.

ANSWER.—Even though the human voice cannot be standardized with reference to intensity or quality, when used with certain precautions the test is eminently satisfactory from a practical standpoint. The ability to hear the human voice is, after all, the most essential criterion of the hearing ability. The longer the room used for testing, the better. The patient should stand at one end of the room without touching anything but the floor, not leaning against the wall or heavy furniture. The ear opposite the one being tested should be tightly closed with a moistened finger, and the eyes closed or averted from the examiner. The latter should use unaccentuated whisper or whisper conversation, not forced whisper or forced voice. Best for the purpose is the residual air after an inspiration and expiration. The examiner should approach the patient from the greatest possible distance and note at which point the noise or words are first heard. In the English language the numerals are low pitched, except the sixes and sevens, which are high. It is better to see at which distance the patient first hears low tones and then high tones separately, before combining them, as this often gives a clue to the location of the hearing defect, if any. If unaccentuated whisper is not heard until the examiner is within a few inches of the patient, the unaccentuated conversation may be used and the distance noted at which the voice is heard.

Unless an audiometer is of the phonographic type, it is impossible to test speech with it. The most important hearing tests aside from those made with the voice are the Weber to determine lateralization of sound, the Schwabach for noting the duration of bone conduction, and the Rinne for finding the relation of air to bone conduction in the same individual. Other but less important tests are the Bing, the Politzer, and the Stenger test for simulation of unilateral deafness. Following is a list of some of the references from the literature on the functional testing of hearing:

Bezold, F.: *Funktionelle Prüfung des Ohres*, 1897, *Lehrbuch der Ohrenheilkunde*, 1906.  
Boenninghaus, G.: *Lehrbuch der Ohrenheilkunde*, 1908.  
Fletcher, Harvey: *Some New Methods and Apparatus for Testing Acuity of Hearing*, *Laryngoscope* 35: 501 (July) 1925.  
Politzer, A.: *Lehrbuch der Ohrenheilkunde*, 1908; *Arch. f. Ohrenh.* 1: 59.  
Sonnenschein, Robert: *The Rationale of Tuning Fork Tests*, *Ann. Otol., Rhin. & Laryng.* 37: 309 (March) 1928.

EOSINOPHILIC LEUKEMIA

To the Editor:—Will you kindly let me know the diagnostic criteria of eosinophilic leukemia? How many cases have been reported in the literature? Do you agree with the statement in Price's Textbook of the Practice of Medicine (Oxford Press, 1933) that eosinophilic leukemia is consistent with a very few immature eosinophils in the peripheral circulation? Which of the two is the more dependable sign of immaturity of eosinophils: lobation or the staining of the granules? Is it possible to make a diagnosis of eosinophilic leukemia without examination of a lymph gland section and bone marrow puncture material? Do you agree that as regards the peripheral blood the same criteria should apply as for the other granulocytic leukemia? Please omit name and address.

M.D., India.

ANSWER.—The salient diagnostic criteria of eosinophilic leukemia as summarized from the literature are persistently increased white cell counts as high as 236,000, an unusually large percentage of eosinophils, absence of an etiologic factor to account for the blood picture, a high basal metabolic rate, splenomegaly with but few exceptions, and biopsy evidence of infiltration of the blood-forming tissue with a predominance of eosinophils. The eosinophils in the peripheral blood and the tissues are mostly of the adult type.

There have been about fourteen cases which are grouped in the medical literature as eosinophilic leukemia or persistent hyperleukocytosis with eosinophilia of unknown etiology that satisfy these diagnostic criteria. In ten of the cases reported the disease was chronic in its course, while in four instances the course was acute. Many authorities doubt the existence of a true eosinophilic leukemia because of the predominance of mature forms of eosinophils in the peripheral blood and blood-forming tissue. D. J. Stephen's report, however (*Am. J. M. Sc.* 189:387 [March] 1935) seems quite convincing. In the case that he studied, bone marrow, spleen, lymph nodes and liver showed definite leukemic changes and a significantly higher proportion of eosinophilic myelocytes to mature eosino-

phils than in other tissues. Myeloblasts were present in the peripheral blood and blood-forming tissue. The clinical and pathologic observations were those of acute leukemia. The author employed the term acute eosinophilic leukemia in view of the predominance of eosinophils in the blood and tissue and to differentiate it from other types of myelogenous leukemia. The lack of neutrophilic myelopoiesis was reflected in the scarcity of neutrophilic myelocytes in the bone marrow, the striking lack of neutrophilic granulocytes in the peripheral blood and in necrotizing inflammatory exudates. The chronic variety is reviewed by M. H. Bass (*Am. J. Dis. Child.* 41: 1394 [June] 1931). Some of the cases are not clear and their leukemic nature may be debated.

The statement made in Price's book coincides with the data recorded in medical literature.

The more dependable sign of immaturity is the nuclear structure.

It is not likely that a diagnosis of eosinophilic leukemia could be satisfactorily established without some information regarding the blood-forming tissue.

Too little is known about the eosinophil cell for one to be dogmatic. Apparently from the cases reported if such criteria were used many of them could not be classified as leukemia. This subject needs further study. A correct answer cannot be given to the last question on the basis of abstract reasoning.

#### HAZARDS OF ETCHING INDUSTRY

*To the Editor:*—In a large industrial plant that has been in existence for a number of years, steel frames were copper plated up to six months ago in the following manner: The raw steel frame went through a water washing, sometimes hot and cold combined, followed by a hot potash bath, again dipped, washed in water and finally placed in an electric cyanide bath. No untoward incidents occurred when this method was employed. Six months ago they began what they called an "etching process," which differed only in that the frame was dipped originally in pure nitric and sulfuric acid for about one minute, after which it was washed in a water bath, and the same process gone through as explained. The cyanide solution was held in wooden tubs lined with tar to prevent any form of leakage. The solution itself was made from cyanide eggs and copper cyanide crystals, obtained from reliable companies with whom they have been dealing for many years. Very recently one of the employees who worked at this dipping-etching process developed an ulceration in his nose, was sent to the hospital and subsequently died of pneumonia. Ten other such employees, working at the same process, were afflicted with minor ulcerations, but no further sequelae occurred. The question was raised as to the probable cause for this resulting condition and ammonia fumes were claimed by some to be the possible offender. When I went through the factory, the smell of ammonia fumes was in evidence but not to a marked degree. Do you see any possible reaction in the etching process that would account for the ammonia fumes? If ammonia is liberated, would it cause nasal mucous membrane ulceration? Is there any other chemical liberated that would be injurious? If any injurious substance is liberated, what could be done to prevent such formation? I may add that they have a ventilating system in the plant to draw the fumes out of the building. Also that the foreman in charge, who has been the chief in that department and who has been constantly employed at this etching process, did not suffer any ill effects as the others who were engaged with him in that occupation. Kindly omit name.

M.D., New York.

*ANSWER:*—In the usual course of plating it is unlikely that any ammonia would be utilized or produced. However, a combination of the various pungent odors present might suggest the odor of ammonia. In the situation described, it seems appropriate to attach significance to the mineral acids newly introduced. Whenever mineral acids come in contact with cyanogen compounds, hydrocyanic acid may be produced. Despite rinsing in water after submersion in acid, and despite a bath in alkali solution, it is quite possible for some acid to remain on the acid-etched surfaces of the metal. Notwithstanding the theory that acid baths will not lead to the presence of acid in the atmosphere as the result of evaporation, it may be recognized that through chemical ebullition some acid may be thrust into the atmosphere. This may combine with cyanogen compounds similarly entering the air from nearby cyanide vats. As a result, additional small amounts of hydrocyanic acid may be produced. The ulceration about the nose, as described is a fairly characteristic result of cyanide action, although some ulceration of lesser nature might be associated with the action of either the mineral acids or the alkalis. By way of prevention it is suggested that, if the use of mineral acid cannot be eliminated, the rinsing in water should be more thorough, and if possible the contact with the alkali solution should be extended. Lateral suction for the entrainment of fume from all vats is desirable, together with extensive general ventilation, resulting in frequent air change for the entire workroom. While chief consideration is here paid to cyanogen compounds, other respiratory irritants and ulcerating substances

may be found in the mineral acids, in the alkalis, and to a slight extent in the hydrogen evolved in the electroplating process. The specific questions propounded already have been answered. The ventilating system mentioned is likely to be unsatisfactory unless the vats themselves are equipped with intakes, thus entraining the injurious substances near the point of origin. Naturally, hot solutions may be expected to give off a greater quantity of irritating substances than cold solutions.

#### PAIN IN PARALYSIS AGITANS

*To the Editor:*—A woman, aged about 67 or 68, has had Parkinson's disease for the last three years. At first she started out with tremors in the fingers and hand, which later extended to the toes and feet. She has grown progressively worse and has had the usual treatment for paralysis agitans. At the present time she takes about one-sixtieth grain (0.001 Gm.) of scopolamine and at night about 1½ grains (0.1 Gm.) of pentobarbital sodium. For the last two years she has complained of pain in the fingers and wrists extending up the arms; also in the toes and feet and in the back of the neck. There seems to be a marked contraction of the tendons of the forearm and hand, and she gets relief by having some one in the family pull on her hands and arms. I have had to give her one-fourth grain (0.015 Gm.) of morphine at times when she complains of severe pain, but this gives little if any relief. The patient weighs approximately 90 to 95 pounds (41 to 43 Kg.). Her heart and lungs are normal. Urinalysis gives negative results. All the reflexes are normal. The Wassermann reaction is negative. Digestion seems to be normal. There is no vomiting and bowels are quite regular. I am not so much concerned with her paralysis agitans but I was hoping that you could give me some suggestion as to the cause of this pain and also some treatment to give her relief. Kindly omit name.

M.D., Michigan.

*ANSWER:*—The pain in paralysis agitans, with associated paresthesia and a feeling of stiffness, is due to the muscular rigidity. Although there is no specific treatment, drugs of the belladonna group often give relief. They can be used in some patients in surprisingly large doses, spread throughout the day. A patient may take by mouth with impunity as much as six or eight ¼ grain (0.0006 Gm.) tablets of scopolamine hydrobromide in twenty-four hours—four on arising, two at noon and two early in the evening—provided careful watch is kept for untoward symptoms. Massage, the application of heat and muscle stretching also are helpful. Phenobarbital sodium in 0.015 Gm. doses, three or four times a day, ought to add to the patient's comfort.

#### EFFECTS OF KEROSENE FUMES

*To the Editor:*—Given a case in which a worker spends an hour in a tank in which there are enough kerosene fumes to make him nauseated and feel generally ill but still able to continue locomotion, could there be any permanent damage or disability to his nervous system? Please omit name.

M.D., Ohio.

*ANSWER:*—It is impossible at this time to provide an unequivocal answer to this query. Permanent damage following exposures similar to that mentioned in the query has been claimed. One case grew out of the use of petroleum naphtha (which chemically is closely similar to kerosene) as a paint solvent for coating the interiors of metal pontoons. The painter was acutely damaged to about the same extent as that suggested in this query. For many months afterward this workman alleged complete disability for work and furnished many vague suggestions of neurologic disease, most of which suggested malingering or at least a neurosis. Moreover, in this case some possibility exists that carbon monoxide was pumped into the pontoons along with heated air intended to accelerate paint drying. In Hayhurst's series of cases of naphtha poisoning (*Poisoning by Petroleum Distillates, Indust. Med.* 5:53 [Feb.] 1936) the following statement is found: "Periods of exposure have ranged from five weeks to three or four years before employment disability began." However, in other portions of his discussion reference is made to two weeks' exposure followed by two months' disability. It is Hayhurst's conception that petroleum distillates produce their damage at least in part through a dissolving action on the fat of the central nervous system, the medullary sheaths of peripheral nerves, heart muscle and liver. It is noted that chronic cases invariably give the impression at first of malingering, although at a later time substantial proof may arise indicative of organic damage. The onset symptoms are chiefly subjective and are said to include headache, dizziness, loss of appetite, dyspepsia, itching, insomnia, pains in the back, legs and cardiac region, weakness, and shortness of breath. Later, according to Hayhurst, the chief manifestations are marked loss of weight, anxiety, bizarre neurasthenic and psychasthenic symptomatology, increased pulse rate, moderate secondary anemia, slight leukocytosis, skin irritation, lowered resistance to infection, diarrhea, mental depression, muscular twitching and tremors.

## LOW BLOOD PRESSURE WITH SYNCOPE

*To the Editor:*—A man, aged 45, suddenly fainted. His systolic blood pressure one hour later was 60, but no diastolic pressure could be heard. The pulse rate was 180 per minute, the temperature was normal and no signs of cardiac decompensation were present. Twenty-four hours later his temperature was 101, pulse 200, and blood pressure 80/40. Electrocardiographic examination revealed a PR interval of 0.16, QRS interval 0.04 to 0.06, lead 1 normal, lead 2 a high T wave, lead 3 a slurring QRS, lead 4 a slurring QRS and a monophasic QRS. Twelve hours later the pulse was 80, blood pressure 88/50, and temperature normal. He states that he has always had low blood pressure. Other manifestations are severe frontal headaches, which usually occur in the morning and disappear in the afternoon, possibly an abscessed tooth, and an enlarged prostate. I feel that the low blood pressure is the cause of the fainting spells. I should appreciate any suggestions as to diagnosis or treatment. Are there any drugs, endocrine products or treatments which are of use in raising the blood pressure? Please send me a bibliography regarding causes and treatment of hypotension. Please omit name.

M.D., California.

*ANSWER:*—It is assumed that hemorrhage has been ruled out. Hemorrhage may be silent and accompanied by little in the way of other symptoms. Hemorrhage from a duodenal ulcer, varices in the esophagus or other sources may appear with no previous symptoms and no obvious sign of hemorrhage at the time.

Epilepsy may first appear as late as 45 or later. Fainting attacks, so called, may appear in aortic stenosis, a lesion that is not as uncommon as it is reputed to be. A paroxysmal attack of some abnormal cardiac rhythm might have been the cause, but that is improbable. A coronary thrombosis is suggested by the fall in blood pressure, the rapid pulse after the syncopal attack, and the elevation in temperature twenty-four hours later.

Persons with an abnormally low blood pressure may have syncopal attacks from anemia consequent on any factor that direct blood elsewhere, as to the splanchnic area. Some mild gastro-intestinal disturbance may be responsible for this. In some persons with lax abdominal walls, such a cerebral anemia may follow a change in position from a sitting to an upright position and may be relieved by wearing an abdominal binder. Fainting attacks occur in the so-called effort syndrome a symptom complex characterized by an overlabile autonomic system. Syncopal attacks occur also in those with a hypersensitive carotid sinus reflex.

It is impossible to give advice when so few data are available. As a rule, drugs designed to elevate blood pressure are best omitted. The first essential to treatment is diagnosis.

HYPERTENSION, NEPHRITIS AND HEADACHE  
COMPLICATING PREGNANCY

*To the Editor:*—A married woman, aged 21, whom I first saw on account of pregnancy, had a blood pressure of 125 systolic, 82 diastolic, at first. It gradually went up to 155/90 the last time she was in my office. When I saw her at the time of delivery it was 205/135. No albumin appeared in the urine at any time, and she had no headaches and no spots before her eyes. The blood pressure after delivery was 178/118 and next day was 140/100. Two days later, during a severe attack of gas, it went up to 205/125 and down again the next day as before. Since the arrival of the baby the patient has had frequent and severe headaches with little relief from acetylsalicylic acid or even from codeine. Albumin is found in the urine, with pus cells 2 plus, epithelial cells and casts. The blood pressure is usually around 150/100. I have failed miserably to better her condition with methenamine, enteric coated ammonium chloride pills or a salt free diet. She has no edema but there is a fullness together with a pasty complexion and she still feels worn out all the time. She has a younger brother who has had albumin in the urine for the last six years. I have made a diagnosis of interstitial nephritis. Could this be correct? What can I try for these headaches? What else can I use for the kidneys? Please omit name.

M.D., Nebraska.

*ANSWER:*—One is curious to learn whether this patient suffered from an acute nephritis in childhood, especially of the type consequent to scarlet fever. The clinical course is such that one immediately suspects a chronic, latent or "silent" nephritis existing before the pregnancy and being acutely and severely exacerbated by it. The existence of proteinuria in a younger brother tends to confirm this impression of probable infective nephritis in childhood. That hypertension did not arise earlier in the pregnancy is evidence that the functional reserve was not severely impaired.

The postpartum drop in arterial tension followed by a rise on the third or fourth day is typical. The delayed rise is frequently to levels higher than those observed just before delivery. It has been demonstrated (Stieglitz, E. J.: Hypertension in Pregnancy, *Arch. Int. Med.* 39:465 [April] 1927) that this delayed rise in arterial tension occurs simultaneously with the onset of lactation and is associated with a correspond-

ing reduction of the calcium content of the blood. The "attack of gas" may possibly have been coincidental.

These patients usually tend to go down hill despite the most energetic therapy, and any further gestations tremendously accelerate the degenerative changes.

The most urgent and necessary study at present is that of the blood. The statement "a pasty complexion and she still feels worn out all the time" is significant. An anemia, perhaps of severe degree, is to be expected both because of the nephritis and because of recent blood loss at the time of delivery. The correction of this anemia is the most imperative therapeutic problem. It is also in many respects the most difficult problem in the management of chronic nephritis. One must not expect rehabilitation and repair of injured tissues if they do not receive an adequate blood supply with all that this implies: ample oxygen to the tissues, ample foodstuffs and efficient removal of metabolic debris. The injury due to hypertension is caused by impaired capillary circulation because of arteriolar constriction, and such histanoxia is tremendously enhanced by simultaneous anemia. If anemia does exist, every effort should be made to build up the hemoglobin content of the blood: parenteral liver therapy, large doses of iron and, if necessary, transfusion of blood. Ferric cacodylate intravenously, in doses of 0.065 Gm. at five day intervals, has proved effective when the hematopoietic structures have not been too severely injured.

## CARBARSONE IN TRICHOMONAS INFECTION

*To the Editor:*—Kindly advise me if there is any danger (generally and to the tissues themselves) from the use of carbarsoné suppositories for the treatment of *Trichomonas vaginalis* vaginitis. If this medication is used, say for two or three courses (thirty-six suppositories) in one month and, in case of recurrence, a course of twelve suppositories monthly, is there not danger from arsenic poisoning? If published, please omit name.

M.D., Massachusetts.

*ANSWER:*—The first death following the administration of carbarsoné was recently reported in *THE JOURNAL* (March 7, p. 769) by Ervin Epstein. The patient took the drug by mouth and in enemas. In spite of this fatal case, carbarsoné is a relatively innocuous drug even though it contains 28.85 per cent of arsenic and is closely related chemically to trypanamide and acetarsone. Epstein reviews the literature and discusses the reactions that may follow the use of carbarsoné. The recommended dose in the treatment of amebiasis is 0.25 Gm. twice a day for ten days. This may be repeated after a rest period. Eli Lilly & Co. markets carbarsoné in capsules of 0.25 Gm. (3¾ grains); hence if thirty-six of these capsules are used over a period of one month the dosage is within the limits of safety. However, Epstein warns that care must be taken in administering carbarsoné and constant watch must be maintained for signs of intolerance.

## PULMONARY EDEMA

*To the Editor:*—About twice a year I am called on to treat a case of acute pulmonary edema of cardiac origin. I should make a rough estimate that my mortality is almost 70 per cent. The patients are usually over 70 years of age, with or without known preceding hypertension. Will you please discuss the treatment, including: (a) Digitalis. (b) Venesection; the patients are cold and clammy, the peripheral veins collapsed. I have not seen any indication for a venesection, but some use it. (c) Morphine and atropine. I have used atropine up to doses of one-fiftieth grain (0.0013 Gm.) or even more. With respect to morphine in elderly people, I have hesitated. After one-eighth grain (0.008 Gm.) of morphine sulfate I have seen the respirations become quieter, but the patient became unconscious and shortly died. However, I have seen patients become unconscious without the morphine. I sometimes use dry cupping. (d) Oxygen; I cannot obtain it soon enough in the emergency. (e) With the possibility that some of these cases may be coronary thrombosis, will you please also discuss this. I am under the impression that hypertonic dextrose solutions absolutely do no harm but that aminophylline is still experimental. If published, please omit name. M.D., Pennsylvania.

*ANSWER:*—The treatment will depend on the condition of which the pulmonary edema is a symptom.

Some cases will be the result of failure of the left side of the heart, consequent on various pathologic conditions but especially following hypertension. Digitalis will be of value in some of these and can be tried in moderate doses for the purpose of increasing tonus and not primarily to slow the heart rate, as the minute volume may be larger with the more rapid rate. It should be tried tentatively and the efforts watched carefully. It may be of value, it may effect no improvement, or it may be a deterrent. One of the mercurial diuretics may be used safely and may be effective. Venesection should be reserved for those cases in which there is an obvious increase in venous pressure; it may be of great value in such cases. Morphine will add to the patient's comfort. Any of the purine

base diuretics, including aminophylline, may be of value. They are not experimental and have been used clinically for more than forty years.

Some of the cases are probably cases of coronary thrombosis and should be treated as such. Absolute rest is the most essential feature of the treatment. Oxygen is of value and can be given successfully by nasal catheter when other means are not available. Treatment cannot be described in detail here.

Some of the cases may be due to the onset of an abnormal rhythm. They are best treated by rest at first and, in cases of fibrillation, by digitalis in full doses if the rhythm does not spontaneously return to normal.

#### REGURGITATION OF FOOD IN ADULT

*To the Editor:*—A woman, aged 42, unmarried, has been having regurgitation now for nearly five years without a great deal of discomfort. Occasionally part of the meal comes up without any effort or straining. There is no pain anywhere, but now and then a slight discomfort in the epigastrium, apparently without any definite connection with meal time. Apparently there is not much acidity. Physical examination is essentially negative except for a rapid pulse, 90, blood pressure 156 systolic, 80 diastolic, and signs of hypothyroidism. The blood and the urine are essentially normal. The basal metabolic rate is minus 20, for which she has been given thyroid with definite improvement in her general feeling. A gastro-intestinal series showed constant regurgitation into the esophagus. The appendix and stomach are normal but there is some generalized ptosis, and downward progress of barium sulfate is slow. Gallbladder functioning is normal except for a rather slow emptying. There is no evidence of stones or adhesions. The duodenal cap is spastic. The lower end of the stomach and the second portion of the duodenum deviate quite far to the right. No defect is seen in the duodenum or stomach. Besides thyroid, she has had acid sodium phosphate bile salts, but slight relief has been obtained only with a calcium-bismuth-magnesium mixture taken at hourly intervals. During the three months of treatment most of her improvements have been only in symptoms associated with low basal metabolism and her weight has come down from 140½ pounds (63.5 Kg.) to 132 pounds (60 Kg.). As far as the regurgitation is concerned, it stays but slightly under control when she is taking the powder every hour daily. Please make some suggestions as to the treatment. I have considered cholecystectomy but am hesitant. Please omit name.

M.D., California.

*ANSWER.*—The noteworthy symptom in this case is the regurgitation of food. It is necessary to consider the condition on a functional basis, since the results of examination, as given in the question, seem to exclude organic disease such as esophageal stricture, diverticulum or diaphragmatic hernia. The demonstration of an irritable duodenal bulb on roentgen examination suggests the possibility of duodenal ulcer, as does the partial relief by the use of alkali. However, if such a lesion exists, it would not result in food regurgitation or in vomiting without evidence of gastric retention during the roentgen examination. Furthermore, the absence of free acid in the regurgitated material would indicate that the food had not reached the stomach, unless free acid is absent from the gastric contents.

If cardiospasm is the cause of the symptom, it should be relieved by the administration of effective doses of atropine. The etiology of the cardiospasm should be determined if possible. An ulcer in the lower part of the esophagus must be considered.

As a further suggestion, it seems advisable to exclude the possibility of a small diaphragmatic hernia through the esophageal hiatus by careful roentgen examination with this condition in mind.

#### POSTMORTEM EXAMINATION OF BRAIN—NECROPSIES ON PRESIDENTS

*To the Editor:*—Can you tell me in what percentage of autopsies the brain is examined and also the spinal cord? Have autopsies been performed on any of the presidents of the United States and what conditions were found? Please omit name.

M.D., New York.

*ANSWER.*—It would not be possible to give the percentages of necropsies in which the brain and spinal cord are examined. The frequency of such examination varies greatly in different places. Generally speaking, the brain is frequently examined as part of the routine, while the spinal cord usually is examined only under special indications.

There are records in medical literature of necropsies on three presidents of the United States: Lincoln (The Medical and Surgical History of the War of the Rebellion, Washington, Government Printing Office, volume II of part I, being the first surgical volume, second issue, 1875, p. 305). Garfield (complete medical record of President Garfield's case, containing all the official bulletins, from the day of the shooting to the day of his death, together with the official necropsy, made Sept. 20, 1881, and a diagram showing the course taken by

the ball, compiled from the records of the Executive Mansion, Washington, 1881), and McKinley (The Official Report on the Case of President McKinley, THE JOURNAL, Oct. 19, 1901, p. 1029). A good many articles have been written about the cases of President Garfield and President McKinley (see Index Catalogue of the Library of the Surgeon General's Office, U. S. Army, second series, Washington, Government Printing Office).

#### ADMINISTRATION OF ACETYSALICYLIC ACID TO INFANTS

*To the Editor:*—The late W. McKim Marriott in his book on "Infant Nutrition" (appendix) gives acetylsalicylic acid in the dose of 1 grain (0.065 Gm.) every four hours for an infant 1 year old. What would be a good vehicle in which to suspend this drug for an infant from 6 months to 2 years of age? Please give several prescriptions. I have noticed that if the powder is not thoroughly moistened before it reaches the throat it causes an unpleasant coughing spell. Does aspiral contain any acetylsalicylic acid? It is a very clear solution. Is the following mixture compatible?

℞ Ammonium carbonate .....	gr. 24
Camphorated tincture of opium.....	dr. 2
Syrup of acacia.....	oz. 1
Water .....	sufficient to make oz. 3

If this query is printed, please omit name.

M.D., New York.

*ANSWER.*—There is no good liquid vehicle for acetylsalicylic acid because it is hydrolyzed by water with the formation chiefly of a salicylate. The addition of potassium citrate does away with the ferric chloride test for salicylates, even though the latter is present in the mixture. The following prescription will serve the purpose.

℞ Acetylsalicylic acid .....	1.0 Gm.
Sucrose .....	5.0 Gm.

Mix and divide into fifteen powders.

A simple way of administering such a powder to an infant is to have the mother dip a moistened finger in the powder and wipe it on the baby's tongue. This will avoid the coughing spell when the dry powder is put into the mouth so that some of the dust is inhaled.

Elixir of aspiral probably does contain some acetylsalicylic acid but no doubt a much larger proportion of salicylate.

The ammonium carbonate mixture is incompatible for several reasons, chief among which is precipitation of the opium alkaloids by the alkalinity as well as the precipitation of the camphorated tincture of opium on the addition of water.

#### TREATMENT OF SQUINT IN BABY

*To the Editor:*—A girl baby, 22 months old, has suddenly begun having an internal squint of the left eye. Her eyes were perfectly straight when she was born. This has come on without any sickness intervening and while the child is in exceedingly good health. I have been advised that it is possibly due to refractive error and am going to have an ophthalmoscopic examination done. Do you think there is any kind of exercise that might be helpful to this child, or do you think that this will disappear without treatment? At the present time we are trying atropine, one drop twice a day, to paralyze accommodation. Please do not publish my name.

M.D., Washington, D. C.

*ANSWER.*—In a 22 months old baby there are really only two measures that may be used in combating squint. The first is a perfect correction of whatever refractive error may be present, the refraction being performed under atropine. The second is the endeavor to develop the amblyopic eye, provided the squint is of the concomitant type. Any competent ophthalmologist can tell by careful examination whether that condition exists.

In a child of that age it is most improbable that the squint will disappear without help. The continued use of atropine for the paralysis of accommodation as a therapeutic measure has not proved particularly successful.

#### CATARACT IN SYPHILIS

*To the Editor:*—Please advise me whether antisyphilitic treatment will cure cataract when there is cataract in conjunction with the mildest possible form of latent syphilis.

CARLETON DEEDERER, M.D., Miami, Florida.

*ANSWER.*—No. Once a cataract has started, regardless of the cause, no known treatment can influence the presence of the opacity of the lens. Arrested progress has been claimed by many through the use of this, that or the other remedy, but the claims have not been substantiated. As far back as 1893, Hirschberg stated that, once diabetic cataract had started, it would progress regardless of a restoration of normal sugar metabolism, and this aphorism holds true for cataract due to other causes.

## Medical Examinations and Licensure

### COMING EXAMINATIONS

#### STATE AND TERRITORIAL BOARDS

ALABAMA: Montgomery, June 29-July 1. Sec., Dr. J. N. Baker, 519, Dexter Ave., Montgomery.

ALASKA: Juneau, March 2. Sec., Dr. W. W. Council, Juneau.

ARIZONA: Phoenix, Jan. 5-6. Sec., Dr. J. H. Patterson, 826 Security Bldg., Phoenix.

CALIFORNIA: *Reciprocity*. Los Angeles, Dec. 16. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

COLORADO: Denver, Jan. 5. Sec., Dr. Harvey W. Snyder, 422 State Office Bldg., Denver.

CONNECTICUT: *Endorsement*. Hartford, Nov. 24. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden.

DELAWARE: Dover, July 13-15. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, Dover.

DISTRICT OF COLUMBIA: Washington, Jan. 11-12. Sec., Commission on Licensure, Dr. George C. Ruhland, 203 District Bldg., Washington.

IDAHO: Boise, April 6. Commissioner of Law Enforcement, Hon. Emmitt Pfost, 205 State House, Boise.

ILLINOIS: Chicago, Jan. 26-28. Superintendent of Registration, Department of Registration and Education, Mr. Homer J. Byrd, Springfield.

IOWA: *Medical*. Des Moines, Dec. 1-3. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines. *Basic Science*. Des Moines, Jan. 12. Sec., Prof. Edward A. Benbrook, Iowa State College, Ames.

KANSAS: Topeka, Dec. 8-9. Sec., Board of Medical Registration and Examination, Dr. C. H. Ewing, 609 Broadway, Larned.

KENTUCKY: Louisville, Dec. 2-4. Sec., State Board of Health, Dr. A. T. McCormack, 532 W. Main St., Louisville.

LOUISIANA: New Orleans, December. Sec., Dr. Roy B. Harrison, 1507 Ithier Bank Bldg., New Orleans.

MARYLAND: *Regular*. Baltimore, Dec. 8. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. *Homoeopathic*. Baltimore, Dec. 8-9. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MICHIGAN: Ann Arbor and Detroit, June 9-11. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 202-3-4 Hollister Bldg., Lansing.

MINNESOTA: *Basic Science*. Minneapolis, Jan. 5-6. Sec., Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. *Medical*. Minneapolis, Jan. 19-21. Sec., Dr. Julian F. Du Bois, 350 St. Peter St., St. Paul.

MONTANA: Helena, April 6. Sec., Dr. S. A. Cooney, 7 W. 6th Ave., Helena.

NEBRASKA: Lincoln, Nov. 23-24. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NEW HAMPSHIRE: Concord, March 11-12. Sec., Board of Registration in Medicine, Dr. Charles Duncan, State House, Concord.

NEW MEXICO: Santa Fe, April 12-13. Sec., Dr. Le Grand Ward, Box 693, Santa Fe.

NEW YORK: Albany, Buffalo, New York and Syracuse, Jan. 25-28. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, 315 Education Bldg., Albany.

NORTH CAROLINA: *Endorsement*. Raleigh, Nov. 30. Sec., Dr. Ben J. Lawrence, 503 Professional Bldg., Raleigh.

NORTH DAKOTA: Grand Forks, Jan. 5-8. Sec., Dr. G. M. Williamson, 4½ S. 3rd St., Grand Forks.

OHIO: Columbus, Dec. 2-4. Sec., State Medical Board, Dr. H. M. Platter, 21 W. Broad St., Columbus.

OKLAHOMA: Oklahoma City, Dec. 9. Sec., Dr. James D. Osborn, Jr., Frederick.

OREGON: Portland, Jan. 5-7. Sec., Dr. Joseph F. Wood, 509 Selling Bldg., Portland.

PENNSYLVANIA: Philadelphia, January. Sec., Board of Medical Education and Licensure, Mr. James A. Newpher, Education Bldg., Harrisburg.

PUERTO RICO: San Juan, March 2. Sec., Dr. O. Costa Mandry, Box 536, San Juan.

RHODE ISLAND: Providence, Jan. 7-8. Chief, Division of Examiners, Mr. Robert D. Wholey, 366 State Office Bldg., Providence.

SOUTH DAKOTA: Pierre, Jan. 19-20. Dir., Division of Medical Licensure, Dr. B. A. Dyer, Pierre.

VERMONT: Burlington, Feb. 10-12. Sec., Board of Medical Registration, Dr. W. Scott Nay, Underhill.

VIRGINIA: Richmond, Dec. 9-13. Sec., Dr. J. W. Preston, 28½ Franklin Road, Roanoke.

WEST VIRGINIA: Charleston, March 1. Sec., Public Health Council, Dr. Arthur E. McClue, State Capitol, Charleston.

WISCONSIN: *Basic Science*. Milwaukee, Dec. 19. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee. *Medical*. Madison, Jan. 12-14. Sec., Dr. Henry J. Gramling, 2203 S. Layton Blvd., Milwaukee.

WYOMING: Cheyenne, Feb. 1. Sec., Dr. G. M. Anderson, Capitol Bldg., Cheyenne.

#### NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II*. Feb. 9-11, May 10-12, June 21-23, and Sept. 13-15. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

#### SPECIAL BOARDS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written examination for Group B applicants* will be held in various cities throughout the country, April 17. *Oral examinations for Group A and B applicants* will be given in Philadelphia, June 7-8. Sec., Dr. C. Guy Lane, 416 Marlborough St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written examination* will be held simultaneously in different centers of the United States and Canada in December. *Practical or clinical examination* will be given in St. Louis in April. Chairman, Dr. Walter L. Bierring, 406 Sixth Ave., Des Moines.

AMERICAN BOARD OF OPHTHALMOLOGY: Los Angeles, Jan. 23. *All applications for this examination must be filed before Dec. 1, and case reports must be submitted before Jan. 1*. Sec., Dr. John Green, 3720 Washington Blvd., St. Louis, Mo.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Cleveland, Jan. 9. *Only applications received by the Secretary on Dec. 1 or before will be acted upon by the Board*. Sec., Dr. Fremont A. Chandler, 180 N. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Philadelphia, June 7-8. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: New York, Dec. 29-30. Sec., Dr. Walter Freeman, 1028 Connecticut Ave., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: Atlantic City, June 4-6. Sec., Dr. Byrl R. Kirklin, Mayo Clinic, Rochester.

AMERICAN BOARD OF UROLOGY: Chicago, Dec. 4-6. Sec., Dr. Gilbert J. Thomas, 1009 Nicollet Ave., Minneapolis.

### Delaware July Report

Dr. Joseph S. McDaniel, secretary, Medical Council of Delaware, reports the written examination held in Dover, July 14-16, 1936. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Seventeen candidates were examined, all of whom passed. Five physicians were licensed by reciprocity and 3 physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
University of Maryland School of Medicine and College of Physicians and Surgeons.....	(1934)		78.2
Long Island College of Medicine.....	(1935)		82
Hahnemann Medical College and Hospital of Philadelphia.....	(1934) 88.4, 89, (1935) 86.2, 87.6, 89.2, 92.1		
Jefferson Medical College of Philadelphia.....	(1933)		81.1
(1934) 79.3, 80.5, 82.8, (1935) 79.2, 81.4, 82.5, 84.5			
Temple University School of Medicine.....	(1934)		78.6

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Rush Medical College.....	(1909)		Illinois
Harvard University Medical School.....	(1925)		New York
New York University, University and Bellevue Hospital Medical College.....	(1932)		Penna.
University of Pennsylvania School of Medicine.....	(1920)		Penna.
Meharry Medical College.....	(1932)		Maryland

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Georgetown University School of Medicine.....	(1935, 3)		N. B. M. Ex.

### Hawaii July Examination

Dr. James A. Morgan, secretary, Board of Medical Examiners, reports the written examination held in Honolulu, July 13-16, 1936. The examination covered 10 subjects and included 55 questions. An average of 75 per cent was required to pass. Six candidates were examined, 4 of whom passed and 2 failed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
University School of Medicine.....	(1934)		80
Medical School.....	(1933)		84
School of Medicine.....	(1933)		79
University of Wisconsin Medical School.....	(1935)		86

School	FAILED	Year Grad.	Number Failed
Loyola University School of Medicine.....	(1936)		1
Licentiate of the Royal College of Physicians of London and Member of the Royal College of Surgeons of England.....	(1936)*		1

\* Verification of graduation in process.

### Georgia June Examination

Mr. R. C. Coleman, joint-secretary, State Examining Boards, reports the written examination given by the Georgia State Board of Medical Examiners in Atlanta, June 10-11, 1936. The examination covered 10 subjects and included 100 questions. An average of 80 per cent was required to pass. Eighty-six candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Emory University School of Medicine.....	(1932)		87.8
(1936) 83.8, 84.7, 85.3, 85.3, 85.5, 85.7, 86, 86, 86.6, 86.7, 86.9, 87, 87.4, 87.5, 87.6, 87.6, 87.7, 88, 88.4, 88.5, 88.7, 88.8, 88.9, 88.9, 89.1, 89.4, 89.6, 89.6, 89.7, 89.8, 89.9, 90.2, 90.5, 90.7, 90.8, 90.8, 91.1, 91.3, 91.5, 91.5, 91.8, 92, 92.3, 93.8			
University of Georgia School of Medicine.....	(1936)		86.2
86.7, 86.9, 87.3, 87.5, 87.7, 88, 88.1, 88.3, 88.6, 88.6, 88.7, 88.8, 88.8, 88.9, 89, 89.2, 89.3, 89.3, 89.4, 89.7, 89.7, 89.7, 90.2, 90.2, 90.2, 90.2, 90.3, 90.4, 90.5, 90.5, 90.7, 91, 91.7, 91.8			
Rush Medical College.....	(1928)		93

University of Nebraska College of Medicine.....	(1934)	91.1
University of Rochester School of Medicine.....	(1935)	89
Meharry Medical College.....	(1936)	89.9

Thirteen physicians were licensed by reciprocity from February 6 through August 19. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
College of Medical Evangelists.....	(1932)	New Mexico	
University of Colorado School of Medicine.....	(1930)	Colorado	
University of Illinois College of Medicine.....	(1931)	Missouri	
University of Louisville Medical Department.....	(1910)	Tennessee	
Tulane University of Louisiana School of Medicine.....	(1923)	Louisiana	
Western Reserve University School of Medicine.....	(1933)	Ohio	
Jefferson Medical College of Philadelphia.....	(1911)	Penna.	
University of Pennsylvania School of Medicine.....	(1934)	Penna.	
Medical College of the State of S. Carolina (1933), (1934)		S. Carolina	
Meharry Medical College.....	(1935)	Tennessee	
University of Tennessee College of Medicine.....	(1933)	Tennessee	
Medical College of Virginia.....	(1930)	Virginia	

## Book Notices

**Industrial Dust: Hygienic Significance, Measurement and Control.** By Philip Drinker, S.B., Ch.E., Professor of Industrial Hygiene, Harvard School of Public Health, and Theodore Hatch, B.S., S.M., Instructor in Industrial Sanitation, Harvard School of Public Health. Cloth. Price, \$4. Pp. 316, with 104 illustrations. New York & London: McGraw-Hill Book Company, Inc., 1936.

Control of the dust hazard in industry is the joint duty of the physician and the engineer. On the whole, the engineer has done a better job than the physician. Two engineers at Harvard University, long and much experienced in industrial dust problems, have produced this praiseworthy book, covering almost every aspect of the problems of industrial dust in relation to the health of workers. The greater the familiarity of the reader with industrial dusts and dust diseases, the higher will be the appreciation of this excellent publication. Much of the material of this book represents first hand investigations of its authors. This, together with the work of other engineers and physicians, is well organized from the standpoint of the engineer. The scope of the field covered is reflected in chapters on the physical properties of dusts, fumes and mists, the effects of dusts and fumes on man, physical and chemical factors in pneumoconiosis, permissible dustiness, the dust survey, dust determination, determination of particle size, chemical and mineralogical analyses, control of the dust hazard, design of local exhaust systems, air cleaning apparatus, filtration, dust respirators and air masks. If patients with dusty lung diseases are to be kept out of hospitals, it is requisite that harmful dusts be kept out of the lungs of workers. This can be accomplished only at the work point. This book points the way to a full measure of dust control in industry. Since no less than two million workers daily are exposed to dusts of various types in the industries of the United States, the control of industrial dusts may not be regarded as a minor problem. This book may be accepted as a valuable guide in the eradication of a long existing and widespread evil in the United States.

**Fieber- und Infektionstherapie: Ausgewählte Beiträge, 1887-1935, mit verknüpfenden und abschliessenden Bemerkungen.** Von Prof. Dr. Julius Wagner-Jauregg, gew. Vorstand der Psychiatr.-Neurol. Klinik der Universität Wien. Cloth. Pp. 209. Vienna, Leipzig & Berne: Verlag für Medizin, Weidmann & Co., 1936.

The author, now 79 years of age, well known for his successful introduction of malarial therapy for the treatment of neurosyphilis, presents the most significant of his publications on the subject of fever and infection therapy in this volume. There are eighteen selected papers (1887-1935), with an introduction and a conclusion. Each paper has a special comment attached which amplifies the information contained, adding greatly to the historical value of the book.

The first paper is a scholarly, painstaking effort to review in 200 cases the effects of infectious diseases on all the various types of psychoses. It tells of his early attempts in 1886 and 1887 to understand so-called spontaneous recovery from supposedly incurable diseases. It is noteworthy that dementia paralytica did not receive special attention, for although it had been known for more than a hundred years, its specific relation to syphilis was not conclusively demonstrated until 1913 by Hideyo Noguchi. Wagner-Jauregg believed that the cases showing the effects of infectious diseases on psychoses were

experiments of nature which should be brought under experimental control, so that clinical use could be made of the results. In the subsequent comment on the paper one learns that several psychotic patients (not with dementia paralytica) had been treated with streptococcus cultures from a patient with virulent erysipelas in 1888-1889 without success and hence a report had not been made.

The second paper, "Psychiatrische Heilbestrebungen," published in 1885, reviews again the facts and theories regarding the effect of infectious diseases on psychoses without attaining a clear understanding of the problem. It is enlightening, in retrospect, to follow the groping of the pioneer, unable to define the essentials yet determined that infectious fever therapy must be of some value. The comment following the paper mentions the use of old tuberculin following 1895 with specific selection of patients with dementia paralytica, principally because they never recovered without the intervention of an infectious disease, while patients with other psychoses occasionally recovered without any treatment. In 1900 the author treated sixty-nine unselected cases of dementia paralytica with tuberculin; the results published in 1904 by Pilcz showed undoubted benefit from the treatment in that life was prolonged and periods of remission were increased. Encouraged by this, every other patient with dementia paralytica was given a course of tuberculin and the results were compared with the controls.

The third paper, published in 1909, reports the favorable results obtained in treating private patients, whose disease was usually of shorter duration and who showed less deterioration, by tuberculin injections and simultaneous use of mercury and iodine. The following paper, published in 1912, reviews the advance of this therapy and discredits the efficacy of arsphenamine in dementia paralytica, for after 1905 arsphenamine had captured the stage and superseded all other methods of treatment.

The fifth paper, published in 1913, describes the fair success achieved during two and one-half years' trial of staphylococcus vaccine, which had been started in an effort to find a more efficient bacterial agent. Other vaccines also were tried. The sixth paper, published in 1914, reports encouraging progress with the tuberculin-mercury treatment, with a conviction that still longer remissions could be obtained by other as yet untried means.

The happy accident of having at his disposal a patient suffering from tertian malaria in June 1917 gave the author the opportunity to use the plasmodium as a means of artificially inducing fever. He had seen and heard of cases that showed favorable results following malaria and now found it superior to all other methods. He states that its superiority could not have been foreseen, since remissions had been obtained by other agents. The obvious hazard of malaria was a formidable barrier toward considering it a therapeutic agent, and there seemed great danger of spreading the disease. Numerous other pertinent questions of these dramatic times are discussed at length.

The following papers, published in 1918, 1924, 1926, 1927, 1929, 1933, 1934 and 1935, discuss technical problems and advances in the use of malarial therapy, including the treatment of the lancinating pains, the gastric crises and the optic atrophy of tabes, the types of malaria, the significance of blood grouping, the dangers of malarial therapy, the maximum improvements possible, and the mode of action. A paper published in 1934, on the use of short wave high frequency current, states that malaria is superior, since he believes that malaria has special immune body stimulating functions which probably are not duplicated by heat alone.

The last paper is a companion piece to the first two in that it reviews the field and furthermore makes an appeal to large mental hospitals to be more systematic in their treatment of psychoses with artificially induced fever. The conclusion surveys the great progress made and expresses hope for a wider use of pyretotherapy, which is already seen in multiple sclerosis and gonorrhea. He points out the real need for comparative studies between series of patients treated with malaria and those treated with diathermy, inductothermy, the Kettering air-conditioned cabinet, and so on.

This collection of papers will be of great interest to the student of the history of medicine and to the rapidly increasing number of those interested in pyretotherapy. This review of

a dramatic phase in the history of medicine furnishes encouragement for further careful clinical work in other diseases, when one remembers that the author worked at this problem for thirty years before he attained a satisfactory beginning.

**The Surgical Technic of Abdominal Operations.** By Julius L. Spivack, M.D., Assistant Professor of Surgery, University of Illinois College of Medicine. Cloth. Price, \$10. Pp. 718, with 677 illustrations. Chicago: S. B. Debour, 1936.

As the author states in the preface, the purpose of the book is not to replace apprenticeship but to render service in the study of the technic of operations on cadavers, on living animals, or by actual assistanceship. The subject is presented in a didactic manner, simple procedures being described first. A brief review of the evolution of the operations is offered in many chapters. A bibliography at the end of each chapter facilitates further studies. The text is to the point and is easily readable. The simplicity of the orderly presentation is worthy of praise. The illustrators deserve special commendation. Exceptions may be taken to certain omissions and commissions. A scientifically trained physician is or should be familiar with the metric system, and the latter should be used exclusively in the manuals. The impression may be gained that degastro-enterostomy, i. e., undoing a previously made stoma, is the only method of dealing with postoperative gastrojejunal ulcer, while in reality more complicated procedures are frequently unavoidable. For didactic purposes it might be desirable to designate the Billroth I, Billroth II and Polya operations as an end-to-end, side-to-side and end-to-side anastomosis. "Cholecysto-electrocoagulectomy" is not only a tongue twister but a misnomer, as it implies the removal of a coagulum; there should be a limit to attempts of describing a procedure in one word. Devoting seven pages to a description of splenectomy and only three pages to the technic of splenectomy must be considered as an incongruity. Kocher's method of repair of a hernia and the use of living sutures or fascia strips are not mentioned. On page 664 the word "adnexa" appears with the spelling "adnexae." Gynecologic operations have been treated in a cursory manner; emphasis should be laid on the knowledge of the topography of the ureters. This little adverse criticism may be justifiably offered but should not detract from the value of the book, which undoubtedly will meet a heartfelt approval by every undergraduate and postgraduate student.

**La pratique du pneumothorax thérapeutique.** Par F. Dumarest, P. Lefèvre, H. Mollard, P. Pavie et P. Rougy. Préface de Fernand Bezançon. Fourth edition of "La pratique du pneumothorax thérapeutique," by F. Dumarest and Ch. Murard. Paper. Price, 50 francs. Pp. 474, with 345 illustrations. Paris: Masson & Cie, 1936.

This excellent volume on pneumothorax therapy pays high tribute to Carlo Forlanini and carries a frontispiece portrait of this pioneer of pneumothorax, with an elucidating preface by Prof. Fernand Bezançon. A thirteen page historical introduction paves the way for a better understanding of the main text, which has been brought down to date by new revisions. The text is appropriately presented in fifteen chapters covering all phases to a full understanding of the mechanism, procedures and results of collapse therapy. Where required, theories are presented and appropriately dispensed. The first edition was presented in 1918, and the authors close the present edition with a part of the introduction of the first edition calling attention to the proper performance of the procedures outlined to attain success, and point to the inestimable value of the procedures for treatment if properly performed. Imprudence can only lead to danger in spite of favorable existing conditions. Radiologic control is considered indispensable. Pneumothorax is credited as a most valuable agent in phthisiotherapy. Some students of this subject might object to the oversteering of the Forlanini ideas and methods at the expense of numerous other contributors to the subject, but this can be readily overlooked as a result of the generous practical information given. In sequence, the subject matter presents the physiomechanics of the lungs and the principles of collapse therapy with the mode of action of pneumothorax and the methods of collapse. Then follow the various types and parts of the equipment, with the technic used and the accidents to be encountered, such as cardiac and nervous complications, subcutaneous emphysema, gas embolism and pleural eclampsia. Under monolateral pneumothorax is considered the primary filling with the significance

of manometric readings, the intervals for filling, the quantity of gas and the period for pneumothorax. The symptoms of pneumothorax are elucidated with and without the presence of adhesions, and hernia of the mediastinum, elective pneumothorax and the immediate results such as fever and cough are described. The influence on the opposite lung and the effect on intercurrent diseases are noted. The pleural complications of pneumothorax with pathogenesis, and clinical interpretations are well presented without omitting any details to a full understanding of the prognosis and treatment, both medical and surgical. The recently developed subject of oleothorax with its technic, indications and complications form an interesting chapter. Several chapters are devoted to the anatomic pathology of the collapsed tuberculous lung and to the mode of action of pneumothorax on the tuberculous disease. The indications and contraindications of monolateral pneumothorax are considered from various angles, including the form and character of evolution of the lesions, the age and sex of the individual, the relation to spontaneous pneumothorax, empyema, pulmonary gangrene, bronchiectasis, hydatid cysts, traumatic hemothorax, pneumonia and bronchopneumonia, the general condition, the heart and circulatory system and the nervous system. In the final chapters the entire subject of pneumothorax is rounded out by consideration of simultaneous and alternating bilateral pneumothorax in its various phases, with an elucidation of pleuroscopy with the endopleural liberation of adhesions. As complementary methods to pneumothorax are given phrenicectomy, scalenotomy with intercostal paralysis, and finally the addition of thoracoplastic operations, partial or complete. The shortcomings of the volume, if there are any, are overshadowed by the practical material presented. The main drawback for the American physician is the fact that it is entirely in French, but for those who read French fluently there is no substitute for this book in the English language; and it might well merit consideration for an English translation. It is intended to cover the practice of pneumothorax as a collapse procedure which deserves the attention of physicians in general and the chest specialist in particular. The volume is paper covered and printed on a good grade of paper, and illustrations are ample but not profuse, line drawings replacing roentgenograms and probably advisedly so, since this is not a roentgenographic textbook and does not detail case reports. It is a well worth-while volume developed over two decades by a group conversant with the subject and recommended by Bezançon, professor of the tuberculosis clinic of the Laennec Hospital, attesting its good quality. Bezançon points out that the use of pneumothorax developed as the fruit of a rational physiologic conception and not by accident. So, likewise this volume is full of rationalities.

**Music in Institutions.** By Willem van de Wall, Doctor of Music, Teachers College, Columbia University. Assisted by Clara Maria Ljepmann, Doctor of Jurisprudence. Cloth. Price, \$3. Pp. 457, with 15 illustrations. New York: Russell Sage Foundation, 1936.

The author of this opus gives this as his main theme: "This book is written to bring to the attention of public minded citizens, especially those interested in welfare institutions, ideas and suggestions about the use of music . . . as an organic detail of institutional life and treatment, and planned to meet the inmate's need for social adjustments and integration of his personality." He then proceeds to develop this theme, presenting a deal of experience, theoretical consideration and practical information in the field of music as an aid to those sick in body, mind and morals immured in institutions. Dr. van de Wall is well qualified for this work through years of toil in his chosen specialty. After reading the endeavors of the author, one gathers that the way in which music is presented in many institutions housing the ailing is haphazard and inadequate and does not reach its main purpose as outlined in the book. In fact, many effects not obtained now are possible if a more studied and systematic application of music is made to those receptive to this mode of approach. With whatever statistics are available at present, no honest observer would claim that music alone cured a patient with dementia praecox, reformed a confirmed criminal or raised the native intelligence of a moron. Shorn of all piffle, it must be admitted that there is little if any potency in the so-called music therapy as administered today. In the main, music is still purely recreational or diverting and does a great deal if it ameliorates the con-

dition of the ailing by giving pleasure or relieves the tedium of a prolonged incarceration or keeps the emotions in some sort of control. But if there is talk of bringing a psychotic patient back to reality by means of music alone there is need for closer investigation behind the smoke screen of premature enthusiasm. There are so many other activities as a part of the life of the institutional inmate that the precise value of music as an isolated therapeutic measure is difficult to estimate, especially in the case of the insane, in which it is supposed to find its greatest usefulness. Then too the temperament, culture and idiosyncrasies of patients must be carefully studied before music as a medical means can be successfully applied. If the objective is to make music a definite therapeutic asset, better methods must be invented that will judiciously correlate music with personality. It is then only that music therapy as a scientific approach can be properly evaluated. The sane and sober exposition of Dr. van de Wall is encouraging. The volume is highly recommended to progressive physicians and musicians and to recreational therapists as the best handbook on music and the dance for institutional work extant. The material is well arranged, clearly written and illustrated. There is an extensive bibliography and the volume is well indexed.

**The Nature and Treatment of Asthma, Hay Fever and Migraine, with Other Clinical Studies on Pyrogenic Therapy, Oxygen Want, Examination of Chest, Chronic Bronchitis, Pneumonia, Protracted Resolution, Fibroid Pneumonia, Pulmonary Apex, Roentgen Rays, Recovery from Subacute Phthisis, Fibroid Phthisis, Phenolsulphonphthalein, Acute Nephritis, Functional Albuminuria, Renal Oedema, Etc. Original Investigations.** By Alexr. Gunn Auld, M.D., Diplomate in Public Health of the University of Oxford. Cloth. Price, 12s. 6d. Pp. 257, with illustrations. London: H. K. Lewis & Co., Ltd., 1936.

The volume consists almost entirely of articles previously published by the author, dating from 1885 to 1936. It may be divided into two parts. The first half deals with the peptone treatment of asthma. Little is said about most of the other aspects of the disease. The usual rôle of allergy in the etiology of asthma and the importance of its consideration is lightly swept aside by the insistence of the author that nonspecific desensitization with peptone is the only diagnostic-therapeutic procedure required. With regard to pollen therapy in hay fever he concludes that "the peptone treatment may be given quite alone, with as good results." The second half of the book deals with such a variety of subjects as chronic bronchitis, a case of recovery from subacute phthisis, renal edema, remarks on the picric acid test and a case of hystero-epilepsy. It is difficult to imagine what purpose this volume could serve to the student, practitioner or specialist. It is pathetically incomplete and biased on the subject of allergy. The general obsolescence of the information on the other diverse topics discussed could leave only one possible function for this volume; that is, to serve as a historical record of the life work of a practitioner, which may be an interesting memento to his admirers.

**New Faces—New Futures: Rebuilding Character with Plastic Surgery.** By Maxwell Maltz, M.D. Cloth. Price, \$3. Pp. 315, with 74 illustrations. New York: Richard R. Smith, 1936.

The author, who has been a frequent contributor to lay publications, wields a facile pen and succeeds ably in glorifying and dramatizing plastic surgery for the nonmedical reader. The book combines historical references, quotations, anecdotes and sufficient suggestions as to technic in an impressive manner so that there is no doubt that for the uninformed it should possess a tremendous appeal. However, the chapter on drama in the operating room, though doubtless effective for the layman, is nevertheless a bit too reminiscent of movie technic to be quite consistent with professional dignity. The principal burden of the discourse is the psychologic aspect of facial blemishes or disfigurements and the astonishing changes in temperament and outlook on life that result from their correction. Numerous case histories are cited by way of illustration. The author, however, fails to mention the discomfort, pain, anxiety and occasional disappointment which frequently accompany these operations, so that one might gain the impression that they are always successful. Also he misses an opportunity to draw the distinction between true deformities and those which are purely imaginary, the latter constituting a considerable percentage of the patients who plague the plastic surgeon and go from one to another seeking the impossible. Nevertheless the author does

the profession a good turn by emphasizing the difference between the reputable qualified surgeon and the quack and by suggesting that the prospective patient make inquiry of the American Medical Association or the local medical society for information on this extremely important matter. The chapter on the rehabilitation of the criminal through the correction of facial deformities such as pug nose, cauliflower ears and disfiguring scars, as suggested by Commissioner MacCormick of New York, affords food for thought even though at first blush the proposition seems fraught with danger. The craze for beauty parlor treatments, the multiplicity of skin lotions and creams and the inordinate habit of "facials" all come in for proper criticism and are sensibly debunked in a chapter on the skin and cosmetics.

**Elementary General Psychology.** By Samuel W. Fernberger, Professor of Psychology, University of Pennsylvania. Cloth. Price, \$3. Pp. 415, with 120 illustrations. Baltimore: Williams & Wilkins Company, 1936.

This book, which is intended for the beginning student, is excellent in many respects. As the author states, it is intended to give the student a first orientation in the material of the science of psychology. As such, it fills the purpose better than most books of its kind. It is preeminently a textbook in experimental psychology, and those chapters which deal with the simpler conscious processes, that is, the special senses, are particularly good. However, in the first page of the preface the author says "Confession must be made that I am an old-fashioned psychologist" and unfortunately modern advances in the understanding of psychologic processes are almost entirely ignored in this book. Freud's concept of the "unconscious" mind is dismissed with a short reference on page 35 and seven pages near the end of the book. The writer shows an almost complete ignorance of psychoanalytic concepts and of Freud's writings. He completely confuses the work of Freud, Adler and Rank, refers to the latter two as psychoanalysts, and consistently uses the term "subconscious" rather than unconscious to explain the freudian concept of a dynamic psychology. The pages devoted to psychoanalysis as a technical procedure are ridiculous. The only reference to the "unconscious mind" is contained, peculiarly enough, in the last paragraph of the preface, in which the author says "I have no idea how much unconscious plagiarism there may be in these pages"; so that while practically denying, or at least minimizing the psychologic importance of an unconscious mind, he confesses to its existence in himself.

**Berättelse från styrelsen för cancerföreningen i Stockholm över verksamhetsåret, 1935. Index of Papers Published at the Radiumhemmet 1909-1935. Report on Cases Treated at the Radiumhemmet 1921-1935.** [By Ellis Berven and James Heyman.] Paper. Pp. 104. Stockholm: K. L. Beckmans Boktryckeri, 1936.

The first part of this report gives an account for 1935 in Swedish of the management of the cancer society in Stockholm. Then comes a list of the papers published from Radiumhemmet since its foundation in 1909. The remaining fifty-four pages contain a statistical analysis and summary of the cases treated at Radiumhemmet from 1921 to 1935. Like the previous report, this report also is of interest to all who are concerned with the modern treatment of cancer.

**Trudy pervogo ukrainskogo c'ezda nervopatologov i psikhiatrov. Otvetsvennyy redaktor: L. L. Rokhl'n. Otvetsvennyy sekretar: O. I. Volfovskiy. Travaux de la première réunion ukrainienne des neuropathologues et aliénistes. Cloth. Price, 19 rubles, 50 kopecks. Pp. 928. Kharkov: Izdatse Ukrainsoy Psikhonevrologicheskoy Akademii, 1935.**

The program included the problems of organization of psychoneurologic practice, of infections of the nervous system, and of psychiatry. Each paper is accompanied by a summary in English and in French. The size of the volume and the variety of subjects preclude the possibility of a detailed review.

### CORRECTION

**The Extra-Ocular Muscles.**—In the review of the book by Luther C. Peter with this title, the first sentence read "In 1920 there appeared in these pages a review of the first edition of Peter's Muscles, and now after sixteen years a second edition has been published." This statement was in error. The first review of the book appeared in 1927 and the lapse of time between the first and second editions was not sixteen years but nine years.

## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Malpractice: Gangrene Attributed to Tight Casts.**—Lundgren sustained a fracture of the tibia and fibula of his right leg approximately at the juncture of the lower third of the leg with the middle third. Eventually gangrene developed and an amputation became necessary. Attributing the gangrene to the negligence of the defendant in applying the casts, the plaintiff sued and obtained judgment in the lower court. The defendant thereupon appealed to the Supreme Court of South Dakota.

According to the evidence the plaintiff, twelve hours after the accident, was brought to a small hospital, where a physician applied a dressing and put the leg in "some kind of a splint." He remained in this hospital for about a week and was then removed to another hospital, where the defendant assumed charge of the case. Roentgenograms disclosed that the broken bones were not in apposition and an open reduction was done. A considerable amount of gas and pus escaped and the incisions were left open and drainage tubes were inserted. A "Boehler splint" was applied and hot dressings were used on the leg from the knee down. The patient's general condition was treated for a number of days. Two weeks later another operation was performed and a "cow-bone splint" was applied. The leg was placed in a plaster cast extending from some distance above the knee down to the toes. Windows were cut in the cast to permit access to the incisions made on May 15, and to the field of drainage therefrom, and to relieve pressure around the heel. These windows were later enlarged. On June 11, a "massive hemorrhage" occurred from the wounds on the patient's leg, which the defendant attributed to a partial destruction of the posterior tibial artery due to the infection that had developed in the leg. About a month later the cast was removed. Another roentgenogram indicated a little growth of new bone above the point of fracture but no new growth below and, in fact, some deterioration of bone tissue. The leg was placed in an open wire cradle for five days and then a second plaster cast was applied. On August 24, about a month later, the second cast was removed and another roentgenogram showed further growth of new bone above the point of fracture but still further deterioration of bone structure below the fracture. On August 30 the patient dismissed the defendant and called in another physician, who found the patient's foot in a gangrenous condition. After taking measures to improve the patient's general condition, he amputated the leg midway between the hip and the knee.

The plaintiff contended that the gangrenous condition of his foot necessitating the amputation was due to impaired circulation resulting from too tight application of the casts. The defendant contended, on the other hand, that the leg was badly infected in the area of the fracture when he first saw the plaintiff and that the gangrene was due to the destruction or partial destruction of the posterior tibial artery by that infection, thereby impairing the circulation of blood to the foot. The physician who operated testified that the condition of the foot when he saw it was not the condition that he would have expected to find if the proximate cause thereof had been a breaking down of the posterior tibial artery, and that a cast unduly tight and constricting could have caused the condition. The plaintiff testified that almost immediately after the first cast was applied, symptoms of undue constriction appeared, that he complained to the defendant and to the nurse that the cast was too tight, that his toes were swollen, discolored and painful and that a sore or ulcer appeared on his heel. The condition of the foot improved after the first cast was removed, he testified, but grew worse after the second cast was applied which was even tighter than the first one. He continuously complained about the discomfort it caused.

The injury in this case, observed the Supreme Court, was to a part of the body not being treated. The treatment was for a fracture a little below the knee. Gangrenous destruction of the foot is not a normal or usual result of such a fracture.

It is a result that might very well follow if the casts were permitted to be or remain so tight as unduly to restrict circulation in the foot. Certainly where, as here, the toes were at all times observable, to permit a cast to remain too tight would be either unskilful or negligent, or both. Even though the defendant exercised good judgment, said the court, with respect to how tight the casts should be when he put them on, that fact would not excuse him from carefully watching conditions thereafter and loosening the casts if there were indications either that they had been put on too tightly or that because of swelling of the leg they had subsequently become unduly constrictive. If the jury believed the plaintiff's testimony, said the Supreme Court, they would be justified in finding that the destruction of the foot resulted from the casts being too tight. If the jury accepted the testimony of the defendant and his witnesses, they would be justified in believing that the casts never were tight and that the impairment of circulation and consequent destruction of the foot resulted from the breaking down of the supplying artery due to infection. The real point at issue was one of fact rather than medical theory or expert opinion. It was for the jury to determine whether the gangrenous destruction of the foot resulted from impairment of circulation by reason of the breaking down of the artery, for which the defendant would not be liable, or whether it resulted from the defendant's lack of care or skill, or both, in incasing the injured leg in casts too tightly applied and maintained, for which the defendant would be responsible.

After reviewing the entire record, the Supreme Court did not feel it could disturb the findings of the jury. The judgment in favor of the plaintiff was accordingly affirmed.—*Lundgren v. Minty* (S. D.), 266 N. W. 145.

**Workmen's Compensation Acts: Employee's Right to Procure Additional Medical Care When That Furnished by Employer Is Inadequate.**—The claimant, a nurse in the Los Angeles County General Hospital, contracted poliomyelitis in the course of her employment. She was admitted to the hospital for treatment, June 5, 1934. Because of crowded conditions due to an epidemic of poliomyelitis, she was apparently unable to obtain the care which her condition required. Sometime after June 28 she developed a mental condition bordering on psychosis. At the instance of a former intern at the hospital, following a conference with the resident physician and a physician in charge of industrial accident cases for the county, she was transferred to a hospital at Mecca and later to another institution. She made steady improvement. From time to time bills for her treatment were sent to the Los Angeles County General Hospital, which the county refused to pay. On Feb. 5, 1935, the claimant was returned to the Los Angeles County General Hospital. Her condition at that time was much improved but became worse after a short stay in the General Hospital and her previous symptoms manifested themselves again. On March 11, 1935, the proper county officials ordered the claimant transferred to the Mecca hospital and authorized the payment of bills for her treatment from that date on. Subsequently, the claimant was awarded compensation by the California industrial accident commission, which award included an amount sufficient apparently to pay all bills for her treatment. Los Angeles County, her employer, then brought certiorari in the district court of appeal, second district, division 1, California, to review the award, contending that since it had not authorized the claimant's removal, in the first instance, to the Mecca hospital or to the other institution, it was not liable for the charges of the two institutions for her care and maintenance.

Section 9 (a) of the California workmen's compensation act, as amended, makes it the duty of the employer to provide—

such medical, surgical and hospital treatment, including nursing . . . as may reasonably be required to cure and relieve from the effects of the injury, the same to be provided by the employer, and in case of his neglect or refusal seasonably to do so, the employer to be liable for the reasonable expense incurred by or on behalf of the employee in providing the same.

If, said the district court of appeal, the treatment supplied by the employer does not within a reasonable time effect a cure, and if the employee thereafter obtains different treatment from his own physician which does seasonably benefit or cure him, he has established the inadequacy of the treatment previously

tendered by the employer, and is justified in changing to his or her own physician, for whose services the employer is liable. 71 C. J. 780. There was evidence before the commission that the treatment received by the claimant at the county general hospital was not such as would seasonably or adequately cure and relieve her from the effects of poliomyelitis and that the treatment to which she resorted did benefit her. Furthermore, said the court, when the claimant became worse after her return to the Los Angeles County General Hospital, the board of supervisors of the county ordered that authority be given for her transfer back to the Mecca hospital for treatment. This action admitted the inadequacy of the treatment at the County General Hospital and conceded the beneficial results that had accrued from her prior hospitalization at the Mecca hospital. Under the circumstances, concluded the court, the claimant had a right to procure medical and hospital treatment other than that tendered by the employer, and the employer was liable for the expenses thereof. The award was therefore affirmed—*Los Angeles County v. Industrial Accident Commission (Calif.)*, 56 P. (2d) 577.

**Malpractice: Pulmonary Abscesses Allegedly Due to Aspiration of Tooth During Tonsillectomy.**—One of the appellants, a physician, performed a tonsillectomy on a 10 year old boy at the Hazard Hospital. The next day the child was removed to his home and was thereafter placed under the care of the family physician. That evening he became ill and his condition was diagnosed as bilateral bronchial pneumonia. About four weeks later he was well enough to return to school but at the end of ten days he again became ill and had an elevated temperature. A roentgenogram taken at the hospital was interpreted by the roentgenologist as showing acute pulmonary tuberculosis. About a month later the child coughed up a tooth. The child eventually died as the result, apparently, of pulmonary abscesses, and the plaintiff, the child's administrator, sued the hospital and the operating physician, contending that the tooth had been negligently loosened during the operation. From a judgment in favor of the plaintiff, the defendants appealed to the Court of Appeals of Kentucky.

The child's parents testified that immediately after their son had come out from under the influence of the ether, about one hour after the operation, he said "Mother, the doctor pulled one of my teeth," that they examined the child's mouth and found that a tooth was missing, and that his gum was bleeding as if the tooth had been recently pulled. A nurse, however, who was the only other person in the room, denied that the child ever made such a statement or that any one had discovered a tooth missing. The physician testified positively that the tooth was not dislodged during the operation and that the mouth gag used was of the standard make and was handled in the usual and ordinary manner. His testimony was corroborated by that of the anesthetist and the surgical nurse. The medical testimony was in accord that ether pneumonia frequently follows the administration of ether anesthesia, and that mucous or other foreign materials may be breathed into the lung following a tonsil operation, which, if infected, may cause abscesses in the lung. The abscesses in the instant case, according to the medical testimony, may have been due to the presence of the tooth in the lung or may have been due to the aspiration of blood and mucus.

The record, in the opinion of the court, was devoid of any facts justifying an inference that the child's tooth was knocked out during the operation. Assuming that the tooth was actually in the child's lung and accepting the testimony of the child's parents that the tooth was found to be missing following the operation, there was no evidence that the tooth was negligently knocked out during the operation. It may have simply fallen out of its socket. The burden was on the plaintiff to prove that the injury complained of resulted proximately from want of care. Proof of a bare possibility that the injury might so have resulted will not suffice. The plaintiff further contended that the defendants could have discovered the tooth in the decedent's lung in time to have removed it and to have saved his life, but negligently failed to do so. But, said the court, all the physicians interpreted the roentgenograms as indicating a tuberculous condition. The most that could be said is that they were mistaken in their judgment, and an error of judgment does not constitute negligence.

The Court of Appeals concluded that the trial court should have instructed the jury to return a verdict for the defendants. Accordingly, the judgment for the plaintiff was reversed.—*Hazard Hospital Co. v. Combs' Adm'r (Ky.)* 92 S. W. (2d) 35.

**Evidence: Conclusiveness of Medical Testimony.**—The appellee's wife applied to the appellant insurance company for a life insurance policy without medical examination, stating, apparently, that she was in good health. The policy was issued June 1, 1934. The insured died July 12, 1934, as the result, apparently, of cancer of the pelvic region. The insurance company refused payment claiming the insured had misrepresented, in her application, the state of her health. The husband, and beneficiary, obtained judgment in the district court and the insurance company appealed to the court of civil appeals of Texas, Amarillo.

Three physicians, who had examined the insured after the application was signed and apparently before the policy had been issued and delivered, testified that she had cancer. One of the physicians testified that in addition to the cancer he found a fistula through which the contents of her small intestines were passing into and were being discharged through the vagina. There was, however, no medical testimony as to her condition at the time the application was signed. The insured's husband, the appellee in this case, and four lay witnesses testified that except for four or five days preceding her death the insured had not been ill, had continued to perform her usual household duties including washing, cooking and taking care of the children. The trial court did not err, said the court of civil appeals, in permitting the appellee's counsel to inform the jury that it was the judge of the weight of the testimony and the credibility of the witnesses, and that it could believe or disbelieve any witness in case the evidence was conflicting. A jury, said the court, is not bound to accept the testimony of expert witnesses as true. The opinion of an expert is entitled to only such weight as the jury may see fit to give it, and the opinions of physicians concerning the insured's health at the time the policy was issued were not conclusive. When, as here, continued the court, the verdict is based on conflicting evidence, it will not be disturbed in the absence of legal error. If the evidence is sufficient to justify the verdict, it will not be disturbed even though the reviewing court might reach a different conclusion and even though it appears to be against a preponderance of the evidence.

The judgment of the trial court for the appellee was consequently affirmed.—*Universal Life & Accident Co. v. Nanes (Texas)*, 92 S. W. (2d) 473.

## Society Proceedings

### COMING MEETINGS

- American Academy of Orthopedic Surgeons, Cleveland, Jan. 11-13. Dr. Philip Lewin, 104 South Michigan Blvd., Chicago, Secretary.
- Eastern Section, American Laryngological, Rhinological and Otolological Society, Boston, Jan. 7. Dr. D. C. Jarvis, Quarry Bank Bldg., Barre, Vt., Chairman.
- Middle Section, American Laryngological, Rhinological and Otolological Society, Chicago, Jan. 11. Dr. Alfred Lewy, 25 East Washington St., Chicago, Chairman.
- Mid-Western Section, American Laryngological, Rhinological and Otolological Society, Chicago, Jan. 11. Dr. Frederick A. Figi, 436 Tenth Ave., S.W., Rochester, Minn., Chairman.
- National Society for the Prevention of Blindness, Columbus, Ohio, Dec. 3-5. Mr. Lewis H. Carris, 50 West 50th St., New York, Managing Director.
- Radiological Society of North America, Cincinnati, Nov. 30-Dec. 4. Dr. Donald S. Childs, 607 Medical Arts Building, Syracuse, N. Y., Secretary.
- Society for the Study of Asthma and Allied Conditions, New York, Dec. 5. Dr. W. C. Spain, 116 East 53d St., New York, Secretary.
- Society of American Bacteriologists, Indianapolis, Dec. 28-30. Dr. I. L. Baldwin, College of Agriculture, University of Wisconsin, Madison, Wis., Secretary.
- Southern Section, American Laryngological, Rhinological and Otolological Society, Memphis, Tenn., Jan. 13. Dr. Charles D. Blassingame, Physicians and Surgeons Bldg., Memphis, Tenn., Chairman.
- Southern Surgical Association, Edgewater Park, Miss., Dec. 15-17. Dr. E. Alton Ochser, 1430 Tulane Ave., New Orleans, Secretary.
- Texas Ophthalmological and Oto-Laryngological Society, Fort Worth, Dec. 4-5. Dr. Kelly Cox, 1719 Pacific Ave., Dallas, Secretary.
- Western Surgical Association, Kansas City, Mo., Dec. 11-12. Dr. A. H. Montgomery, 122 S. Michigan Blvd., Chicago, Secretary.

## Current Medical Literature

### AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers in continental United States and Canada for a period of three days. Periodicals are available from 1926 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Requests as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (\*) are abstracted below.

#### American Journal of Anatomy, Philadelphia

59: 347-510 (Sept. 15) 1936

- Studies on Sex Reversal in Amblystoma: X. Sex Reversal in Parahbionic A. Punctatum of Various Local Races. R. R. Humphrey, Buffalo.—p. 347.
- Studies in Wave Mechanics of Muscular Motion: VII. Experimental Biophysical Basis of Transitional Muscle in Gizzards of Birds. E. J. Carey, Milwaukee.—p. 365.
- Ossification as Additional Evidence in Differentiating Identicals and Fraternal in Multiple Births. J. W. Pryor, Lexington, Ky.—p. 409.
- Musculature of Antebrachium and Manus in Platypus. A. B. Howell, Baltimore.—p. 425.
- Normal and Aberrant Corpora Lutea of Rhesus Monkey. G. W. Corner, Rochester, N. Y., with collaboration of G. W. Bartelmez, Chicago, and C. G. Hartman, Washington, D. C.—p. 433.
- Sexual Dimorphism of Pelvis of Mouse, Effect of Estrogenic Hormones on Pelvis and on Development of Scrotal Hernias. W. U. Gardner, New Haven, Conn.—p. 459.
- Absorptive Area and Volume of Chorionic Villi in Circumvallate Placentas. Marie Dees-Mattingly, New Orleans.—p. 485.

#### American Journal of Clinical Pathology, Baltimore

6: 423-520 (Sept.) 1936

- Circulating Blood Cells as Seen by Dark-Ground Illumination. O. C. Hansen-Pruss, Durham, N. C.—p. 423.
- Study of Certain Factors Which Influence Sedimentation Rates of Erythrocytes, with Especial Emphasis on Effect of Temperature. K. T. Sasano, W. H. Ordway and E. M. Medlar, Mount McGregor, N. Y.—p. 432.
- Use of Stab Culture in Growth of Certain Pathogenic Fungi. J. W. Williams, Cambridge, Mass.—p. 444.
- Borderline Silicosis. H. C. Sweany, Chicago.—p. 448.
- Studies of Urobilinogen: I. Improved Method for Quantitative Estimation of Urobilinogen in Urine and Feces. C. J. Watson, Minneapolis.—p. 458.
- Study of Organisms and Serums from Number of Typhoid Patients and Carriers. Lois Almon and W. D. Stovall, Madison, Wis.—p. 476.
- Erythrocyte Counts, Hemoglobin and Erythrocyte Volume in Normal Young Men and Women Residing in Eastern United States. W. P. Belk, Elsie Curtis and Margaret K. Wilson, Philadelphia.—p. 487.
- Use of Calculation Charts for Wintrobe Hematocrit and Sedimentation Rates. F. L. Dunn and J. C. Sharpe, Omaha.—p. 497.
- \*Simple Slide Test for Syphilis. S. J. Lewis, Beaumont, Texas.—p. 502.

**Simple Slide Test for Syphilis.**—Lewis devised a modification of the precipitation reaction. He has tested 1,500 serums from prospective transfusion donors with this test when rapid results were necessary. In no instance has the test been strongly positive when the Kolmer, Kalm and Kline were negative. In treated syphilis all the standard precipitation technics and his have proved somewhat more sensitive than the Wassermann reaction. Into a small test tube, 0.1 cc. of stock antigen and 0.3 cc. of the saline diluent are measured. The tube is shaken for a moment and mixed thoroughly for a few seconds by means of a capillary pipet with a rubber bulb or a medicine dropper. The mixture is allowed to stand for five minutes and is agitated again just before using. The antigen mixture should be used within thirty minutes of its preparation. Two drops of clear serum that have been heated at 56 C. for thirty minutes are placed on a slide, and adjacent to the serum three drops of the antigen mixture. This is mixed with the broader flat end of a toothpick so that the mixture occupies the middle two thirds of the slide and is not near enough to the sides to run over. The slide is rocked from side to side for three minutes and read within five minutes by indirect light against a dark background, or by holding a daylight bulb in front of and just above it. The test should not be performed in a cold room, as this causes a tendency toward false positives. Fans and strong drafts should be avoided. Negative serums have a smooth, cloudy, opales-

cent appearance. Positive serums show various degrees of a brownish granular precipitate, easily seen. Very strongly positive serums will show large clumps floating in an almost clear fluid. A minute amount or degree of precipitation should be disregarded or checked by other methods.

#### American J. Digestive Diseases and Nutrition, Chicago

3: 457-518 (Sept.) 1936

- External Trauma as Cause of Lesions of Esophagus. P. P. Vinson, Rochester, Minn.—p. 457.
- \*Study of Hippuric Acid Excretion as Test of Hepatic Function. K. G. Kohlstaedt and O. M. Helmer, Indianapolis.—p. 459.
- \*Relation of Gastric Acidity to Erythrocyte Content of Blood. F. L. Apperly and M. Katherine Cary, Richmond, Va.—p. 466.
- Intestinal Rate, Normal Nutrition and Health: New Principles for Maintenance, Restoration and Control of Health. F. L. Burnett, Boston.—p. 469.
- Studies on Constitution and Ulcer: III. Gastric Secretion in Healthy Members of "Ulcer Families." J. Meyer, M. Maskin and H. Necheles, with assistance of E. E. Seidman, L. Scheman, E. Rosenman and P. Levitsky, Chicago.—p. 474.
- Nocturnal and Diurnal Variations in Acidity of Spontaneous Secretion of Gastric Juice. Frances A. Hellebrandt, Rubye H. Tepper, Helen Grant and Ruth Catherwood, Madison, Wis.—p. 477.
- Inhibitory Effect of Corpus Luteum on Gastric Secretion. I. A. Manville and W. R. Munroe, Portland, Ore.—p. 482.
- Experimental Gout in Turkeys. J. L. Bollman and C. F. Schlotthauer, Rochester, Minn.—p. 483.
- Spontaneous Hyperinsulinism Due to Pancreatic Adenoma in Patient with Carcinoma of Sigmoid: Catastrophic Conjunction. C. F. Long, L. Sheplin and D. B. Fishback, Philadelphia.—p. 488.
- Enzymic Efficiency in Avitaminosis: III. Influence of Vitamin B<sub>1</sub> and G Deficiencies on Concentration of Blood and Tissue Enzymes. M. C. Kik, B. Sure and Kathryn Sue Buchanan, with technical assistance of J. DeWitt, Fayetteville, Ark.—p. 490.
- Id.: IV. Influence of Vitamin A Deficiency on Concentration of Blood and Tissue Enzymes. B. Sure, M. C. Kik and Kathryn Sue Buchanan, with technical assistance of J. DeWitt, Fayetteville, Ark.—p. 493.
- Röntgenographic Studies of Mucous Membrane of Colon: II. Colitis. F. J. Lust, New York.—p. 494.
- New Sigmoid Cannula. Z. Bercovitz, New York.—p. 499.

#### Hippuric Acid Excretion as Test of Hepatic Function.

—Kohlstaedt and Helmer used the hippuric acid test in seventy-seven cases. The results indicate that there may be a marked reduction in the detoxifying ability of the liver before any of the clinical signs of hepatic disease can be detected. The simultaneous determination of the urea clearance increases the value of the hippuric acid test. The ether extraction method with the formol titration is the most practical as well as the most accurate method of determining the hippuric acid in the urine. The combined urea clearance and hippuric acid test is a reliable and valuable adjunct in the study of hepatic disease.

#### Relation of Gastric Acidity to Erythrocyte Blood

Count.—Apperly and Cary studied the relation of gastric acidity to the red cell content of the blood in normal persons, in hemorrhagic anemia and in polycythemia. They made experiments on anemia and polycythemia in dogs, observed the incidence of achlorhydria in anemia and polycythemia and the relation of gastric acidity to the red cell content of the blood in association with gastric abnormality. Their observations show that: 1. When, as a result of recent or chronic hemorrhage, the red cell content of the blood falls below a certain critical level, free acid disappears from the stomach. Their results in a few cases in man indicate that this level is, on the average, about one-third to two-thirds the normal. In dogs the critical level is much lower. They have no information concerning gastric acidity in anemias of other origins. 2. Above this critical level, gastric acidity rises with the erythrocyte content to a maximum when the latter somewhat exceeds that found in normal health; i. e. in man, a hematocrit volume of 46 per cent. 3. With increasing hematocrit volumes above about 50 per cent in man and the dog, acidity steadily falls again to low figures. 4. From the foregoing a rising incidence of achlorhydria should be expected with increasing anemia and increasing polycythemia. This has been shown to be a fact by several observers. 5. When severe hemorrhagic anemia is associated with peptic ulcer, pylorospasm or certain other gastric conditions, acidity values are found to be far higher than those with a corresponding degree of anemia without gastric abnormality. 6. The experiments show that in certain conditions when anemia is associated with achlorhydria, the entity anemic achlorhydria must be considered in addition to Witts's achlorhydric anemia and pernicious anemia.

## American Journal of Hygiene, Baltimore

24: 227-446 (Sept.) 1936

- Toxicology of Selenium: III. Determination of Selenium in Air-Gas-Dust Mixtures. H. C. Dudley, Baltimore.—p. 227.
- Relation of Density of Anopheline Mosquitoes and Transmission of Malaria. M. A. Barber, J. B. Rice and A. G. Mandekos, New York.—p. 237.
- Seasonal Incidence of Malaria Transmission in Macedonia. M. A. Barber, A. G. Mandekos and J. B. Rice, New York.—p. 249.
- Staphylococcal Immunity. J. S. Kitching and L. N. Farrell, Toronto.—p. 268.
- Studies on Bactericidal Action of Phenol and Merthiolate Used Alone and in Mixtures. Carolyn R. Falk and Sophronia P. Aplington, New York.—p. 285.
- \*Viability of Parasitic Protozoa After Death of Host. R. Hegner, Baltimore.—p. 309.
- Studies on Schistosome Dermatitis: IV. Further Information on Distribution in Canada and the United States. W. W. Cort, Baltimore.—p. 318.
- Temperature Coefficient of Production of Erythema by Ultraviolet Radiation. Janet Howell Clark, Baltimore.—p. 334.
- Common Cold: Effect of Merthiolate as Therapeutic Agent. T. J. LeBlanc and M. B. Welborn, Cincinnati.—p. 343.
- Helminthologic Survey of Baltimore House Rats (*Rattus Norvegicus*). G. W. Luttermoser, Baltimore.—p. 350.
- \*Occurrence of Neutralizing Antibodies for Human Influenza Virus in Serums of Persons with Various Histories of Influenza. H. W. Brown, Boston.—p. 361.
- Studies on Acquired Immunity to Dog Hookworm, *Ancylostoma Caninum*. K. B. Kerr, Baltimore.—p. 381.
- Recovery of Influenza Virus Suspended in Air and Its Destruction by Ultraviolet Radiation. W. F. Wells and H. W. Brown, Boston.—p. 407.
- \*Effect of Various Suspending Mediums on Pathogenic and Phagocytic Activity of *Endamoeba Histolytica*. W. W. Frye and H. E. Meleney, Nashville, Tenn.—p. 414.
- New Selenite Enrichment Mediums for Isolation of Typhoid and Paratyphoid (*Salmonella*) Bacilli. E. Leifson, Baltimore.—p. 423.
- Nonvenereal Transmission of *Trichomonas Fetus* Infection in Cattle. J. Andrews and F. W. Miller, Baltimore.—p. 433.
- Attempt to Immunize New-Born Infants to Tetanus Neonatorum Through Administration of Tetanus Toxoid to Pregnant Mothers. C. N. Leach, S. H. Zia and K.-T. Lim, Peiping, China.—p. 439.

## Viability of Parasitic Protozoa After Death of Host.

—The results of Hegner's studies involve intestinal protozoa in rats, guinea-pigs and frogs, malaria parasites in birds and trypanosomes in rats. He found that trichomonad flagellates may remain alive and multiply when transferred to suitable mediums after being in the cecum of a dead rat at 37 C. for twenty-four hours, at room temperature for four days and at 5 C. for thirteen days. Balantidial ciliates may remain alive in the cecum of a dead guinea-pig at room temperature for four days and at 5 C. for four days. Intestinal protozoa may live for from two to twenty days or more in a dead frog. The ciliates appear to be less resistant than the flagellates. *Opalina* lived for at least four days, *Nyctotherus* for nine days, *Trichomonas* for seventeen days and *Hexamita* for twenty days. *Plasmodium cathemerium* remained alive and capable of infecting clean canaries after being in the blood of a dead canary at 5 C. for forty-eight hours. *Trypanosoma lewisi* remained alive in the body of a dead rat for three days at room temperature and for ten days at 5 C. They were capable of infecting clean rats after nine days in a dead rat at 5 C. An attempt was made to demonstrate the failure of the trypanocidal antibody to appear at the peak of the infection in the dead rats, but the conditions of the experiment rendered the data unreliable.

**Antibodies for Influenza Virus.**—Brown performed influenza virus (Puerto Rico 8 strain) neutralization tests using mice, with the serums of persons with various histories of attacks of influenza with the following results: 1. Neutralizing antibodies were present in the serums of 74 per cent of the adults who had influenza during the 1918 and 1919 pandemic but who have not had the disease since that time. 2. Adults who passed through the 1918 and 1919 pandemic and subsequent seventeen years without an attack of influenza possessed potent antibodies to the Puerto Rico 8 virus. 3. The incidence of antibodies to the Puerto Rico 8 strain of influenza virus of children from 3 to 12 years of age was approximately the same as their incidence in the adults tested. Such antibodies were encountered infrequently in children less than 3 years of age. 4. Neutralizing antibodies to the Puerto Rico 8 virus in the serums of persons convalescent from an illness diagnosed sporadic influenza were no more potent than the antibodies present in their serums previous to the disease. 5. Attempts to

recover a filtrable virus pathogenic for ferrets from three persons diagnosed as having influenza during a small institutional epidemic all failed. Neutralization tests in mice with the serums obtained from these patients during their illness and also after their convalescence indicated that no appreciable change had occurred in their antibody content to the Puerto Rico 8 strain of influenza.

**Effect of Mediums on Activity of *Endamoeba Histolytica*.**—The present observations reported by Frye and Meleney indicate that the decrease of pathogenic activity of *Endamoeba histolytica*, when washed cultures are suspended in horse serum-Ringer's solution (1:6) for inoculation into kittens, is not due, as they previously stated, to the absence of bacteria in the suspending medium, but seems to be due to an inhibiting effect exerted by horse serum. This is shown by the fact that Ringer's solution alone as a suspending medium did not exert the inhibiting effect shown by horse serum-Ringer's solution. Boiled horse serum-Ringer's solution not only did not show the inhibiting effect of fresh horse serum but seemed to stimulate the amebas to somewhat greater pathogenic activity. Berkeley filtrates of the supernatant fluid of the ameba culture, when heated to the point of coagulation of albumin (70 C. or higher) and used as suspending mediums for washed amebas, resulted in a considerable increase in the pathogenic activity of the amebas. The phagocytosis of red blood cells by washed amebas in vitro was most marked in heated filtrates, somewhat less marked in boiled horse serum-Ringer's solution, still less in horse serum-Ringer's solution, and poor in Ringer's solution alone.

## American Journal of Ophthalmology, St. Louis

19: 739-840 (Sept.) 1936

- Roentgen-Ray Cataract: Experimental, Clinical and Microscopic Study. P. J. Leinfelder and H. D. Kerr, Iowa City.—p. 739.
- Minor Sequels of Eye Contusions. M. Davidson, New York.—p. 757.
- Fluorescent Lamp for Cataract Surgery. H. R. Hildreth, St. Louis.—p. 770.
- Critical Summary of Surgical Experiences in 1934. E. Hill and R. H. Courtney, Richmond, Va.—p. 773.
- Meningococcal Conjunctivitis Followed by Septicemia and Beginning Meningitis: Case Report. F. M. Reese, Baltimore.—p. 780.
- Staphylococcus Toxin Combined with Lens Extract as Desensitizing Agent in Individuals with Cutaneous Sensitivity to Lens Extract. E. L. Burky and H. C. Henton, Baltimore.—p. 782.
- Illuminating Device to Be Used as an Attachment to Binocular Corneal Microscope for Gonioscopy and Goniophotography. R. Castroviejo, New York.—p. 786.
- Paralysis of Divergence of Functional Origin: Case Report. C. P. Clark, Indianapolis.—p. 789.

## American Journal of Public Health, New York

26: 865-960 (Sept.) 1936

- Health Work on Sugar Plantation in Hawaii. I. V. Hiscock, New Haven, Conn.—p. 865.
- Practical Methods of Testing for Mastitis. J. M. Rosell, Oka, Que.—p. 872.
- Adaptation of Proposed Standard Methods Medium to General Bacteriologic Culturing: Preliminary Report. C. S. Bowers and D. Evelyn West, Hartford, Conn.—p. 880.
- Development of Leprosy Clinics in Control of Leprosy. L. S. Huiizenga, Jukao Ku, China.—p. 883.
- Administration of Health Education and Health Supervision in Negro Colleges. P. B. Cornely, Washington, D. C.—p. 888.
- Effectiveness of Methods of Dish and Utensil Washing in Public Eating and Drinking Establishments. A. J. Krog and Dorothy S. Dougherty, Plainfield, N. J.—p. 897.
- Lead Content of Chewing Tobaccos and Snuffs. C. C. Cassil and C. M. Smith, Washington, D. C.—p. 901.
- Factors Influencing Vitamin C Content of Vegetables. D. K. Tressler and G. L. Mack, Geneva, N. Y., and C. G. King, Pittsburgh.—p. 905.
- Use of Nigrosine to Demonstrate *Treponema Pallidum* in Syphilitic Lesions. R. B. Dienst and E. S. Sanderson, Augusta, Ga.—p. 910.
- Epidemiologic Features of Typhoid Fever Outbreak in West Philadelphia Following Supper. G. E. Johnson, Philadelphia.—p. 913.
- Procedures Employed by Laboratories of Departments of Health in Various States and Some of Larger Cities of the United States in Serodiagnosis of Syphilis as of December 1935. E. L. Webb and T. F. Sellers, Atlanta, Ga.—p. 918.
- Milwaukee's Well Advertised Gastro-Intestinal Epidemic. J. P. Koehler, Milwaukee.—p. 921.
- Incidence and Severity of Hookworm Infestation in East Texas. R. G. Upton, Nacogdoches, Texas.—p. 924.
- Meeker Burner with Auxiliary Flame for Bacteriologic Use. M. E. Highlands, Orono, Maine, and P. K. Bates, Boston.—p. 927.
- Swimming Pool Sanitation Control: Notes. W. S. Johnson, St. Louis.—p. 928.

**American Journal of Surgery, New York**

33: 341-598 (Sept.) 1936. Partial Index

- Amenorrhea; Menorrhagia; Metrorrhagia; Delayed Menopause. H. S. Crossen and R. J. Crossen, St. Louis.—p. 345.  
Endometrial Cycle and Mechanism of Normal Menstruation. S. H. Sturgis and J. V. Meigs, Boston.—p. 369.  
Operative Treatment of Sterility. F. W. Sovak, New York.—p. 406.  
Cancer of Corpus Uteri. W. P. Healy, New York.—p. 474.  
Fibromyoma Uteri. J. P. Greenhill, Chicago.—p. 478.  
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Gonorrhea in Adult: Diagnosis: Elliott Treatment and Hyperpyrexia. W. S. Gurnee, New York.—p. 500.  
X-Ray Therapy of Tuberculosis of Female Reproductive Organs. M. Lenz and J. A. Corseaden, New York.—p. 518.  
\*Trichomonas Vaginalis Vaginitis. E. Allen, Chicago.—p. 523.  
Gonorrheal Vaginitis in Children. R. M. Lewis, New Haven, Conn., and Eleanor L. Adler, New York.—p. 529.  
\*Puerperal Cervix. R. L. Barrett, New York.—p. 541.  
Nonsurgical Treatment of Retrodisplacement of Uterus. W. M. Findley, New York.—p. 546.  
Surgical Treatment of Retrodisplacement of Uterus. F. C. Holden, New York.—p. 553.  
Tuberculosis of Uterine Cervix. C. W. Lester, New York.—p. 574.

**Trichomonas Vaginalis Vaginitis.**—Allen believes that high dry magnification of the fresh unstained vaginal secretion under reduced illumination simplifies the diagnosis of *Trichomonas vaginalis* vaginitis. Later staining of the dried secretion will serve to differentiate the other common forms of vaginal infection, such as yeast and gonorrhea. The profuse bubbly discharge found in this condition is laden also with various strains of streptococci. These streptococci may invade the urinary tract, Bartholin glands and probably the deeper structures of the pelvis. In like manner the male urinary tract may become infected during coitus either with the coccoid organisms or the motile flagellates themselves, and a troublesome urethritis or prostatitis is the result. Constant reinfection of the female renders permanent cure impossible until the male focus has been treated. Permanent cure of *Trichomonas vaginalis* will depend on recognition of possible avenues of infection. Elevation of the general resistance of the patient is important in the therapy. Scrubbing of the vaginal walls should not be instituted until some of the acute reaction has subsided. The vaginal walls are then sprayed uniformly with the powder proposed by Gellhorn (two parts of acetarsone to seven parts each of kaolin and sodium bicarbonate). The introduction of the powder can be accomplished readily by the use of the small blower used for insect powders. The excess powder may be kept in the vagina by inserting a pledget of cotton between the blades. The external genitalia also should be dusted with the powder. This treatment should be done daily for at least six days and should be reinstituted for a few days following the next menstrual period. In the interim the patient is instructed to insert into the vagina nightly a vaginal suppository containing 1 per cent of trinitrophenol, followed in the morning by a 2 quart warm water douche to which has been added 1 teaspoonful of lactic acid. The frequency of these topical applications should be decreased as the vaginitis improves, but they should be persisted in for at least three months. If the symptoms do not disappear rapidly or at any time the patient complains of vulvar irritation, the treatment is changed. A tablet containing the same ingredients as the powder may be substituted for the suppositories. Carbarsone may be substituted for the acetarsone in either the powder or the tablets. Tampons soaked in the broth filtrate as described by Hibbert may be substituted for the insufflations of powder. A 10 per cent solution of strong protein silver introduced into the vagina with the patient in the knee-chest position will often produce gratifying results.

**Puerperal Cervix.**—Barrett quotes Miller and his associates to the effect that a damaged or diseased cervix is present in 80 per cent of all women who have borne children. Cervical erosions, cervicitis and endocervicitis are known to exist in about 10 per cent of nulliparous women. Evidence has accumulated showing the frequency with which these diseased and neglected cervixes lead to puerperal infection in subsequent labors. A chronically diseased cervix bears a direct relationship to malignant conditions in this area. Adequate postpartum and puerperal care of the cervix properly begins at the first antepartum examination of the patient. The examination includes the usual smears for bacterial flora and, in addition, inspection to reveal lacerations, cystic changes, polyp growths, erosions, granulations and epithelial changes, such as leuko-

plakia. The use of the colposcope is helpful in the detection of any surface changes or irregularities. Any areas with a loss or change of normal epithelium should receive special scrutiny. Malignant conditions having been excluded and all acute infection cleared up, the chronic lesions, such as erosions, cervicitis, cystic changes and endocervicitis, should receive proper treatment. In the majority of instances these conditions may be eradicated by some form of electrosurgical diathermy, such as the Hyams conization method or simple electrocoagulation. These methods are suitable for office treatment. In the more extensive lesions of the cervix, surgical correction by Sturmdorf or Emmet trachelorrhaphy may be preferable. Electrocoagulation may be used to clear up common cervical lesions in the early months of an existing pregnancy. There is a slight danger of interrupting pregnancy, however, and the patient should be warned of this possibility. Trauma to the cervix must be avoided during labor so far as is possible. At the end of the third stage of labor, under strict surgical precautions, the cervix should be palpated and inspected. Lacerations of various types may be present from simple avulsion of the muscle fibers or nicks in the mucosa to the true unilateral, bilateral or stellate lacerations of varying depth and extent. If unrepaired, these lacerations tend to heal slowly by granulation with an increased scar formation, infection, hypertrophy and eversion of the cervical lips. If lacerations of 1 cm. or more in depth are found, these are immediately sutured. Healing is more prompt and complete if the mucosa of the cervical canal is not included in the suture. Primary repair of cervical lacerations should not be undertaken in the presence of shock or after an exhausting labor, or in cases in which infection is suspected. Postpartum hemorrhage, unless due to the cervical lacerations, usually contraindicates immediate cervical repair unless it has been quickly controlled by oxytocics or uterine tamponade. No obstetric service is complete without a careful pelvic examination at the end of six or eight weeks. At this examination special attention should be directed to the detection of cervical damage. There is little tendency to further healing of the damaged cervix after eight weeks. Lacerations, erosions and endocervicitis are quickly and safely eradicated by electrosurgical methods in the late puerperium, preferably about eight weeks post partum. For the minor lesions the method of linear cauterization with the nasal tip cautery, as advocated by Dickinson, is satisfactory. The author's preference is electrocoagulation with the ball tip electrode or with the Cherry-Ende bipolar electrode. The Hyams conization technic is also suitable in selected cases.

**Annals of Otol., Rhinol. and Laryngology, St. Louis**

45: 611-912 (Sept.) 1936

- Some Observations on Facial Nerve Palsy. J. A. Babbitt, Philadelphia.—p. 611.  
Basaloma or So-Called Cylindroma of Air Passages. J. C. Beck and M. R. Guttman, Chicago.—p. 618.  
"Aural" or "Acoustic" Method of Treatment Deafness: Further Investigation. H. C. Ballenger, Chicago.—p. 632.  
Function of Stapedius Muscle. A. B. Potter, St. Louis.—p. 638.  
Endoscopy for Foreign Body: Report of 178 Cases of Foreign Body in Air and Food Passages. C. L. Jackson, Philadelphia.—p. 644.  
Early History of Otolaryngology in America, with Especial Reference to American Laryngological, Rhinological and Otolological Society. T. J. Harris, New York.—p. 655.  
\*Herpes Zoster Oticus: Report of Three Cases. F. T. Hill, Waterville, Maine.—p. 666.  
Suggested Operative Procedure for Relief of Stenosis in Double Abductor Paralysis: Anatomic Study. J. M. Lore, New York.—p. 679.  
Nasal Mucin. Catherine C. Buhrmester, St. Louis.—p. 687.  
Aural Manifestations of Lipoid Granulomatosis (Hand-Schüller-Christian's Disease). J. G. Druss, New York.—p. 693.  
\*Relationship of Climate to Diseases of Upper Respiratory Tract. R. R. Montgomery, Long Beach, Calif.—p. 704.  
When Is Sinusitis Chronic? S. N. Parkinson, Oakland, Calif.—p. 721.  
Osteomyelitis of Frontal Bone. A. C. Jones, Boise, Idaho.—p. 726.

**Herpes Zoster Oticus.**—Hill presents three cases of herpes zoster oticus and states that it is a relatively rare condition. While the exact etiology is still in doubt, it is generally agreed that the causative agent is a filtrable virus. Teague and Goodpasture showed experimentally that the virus can pass along the nerve from some inoculated area to the spinal cord and brain, the transmission being along the axis cylinder of either motor, sensory or sympathetic fibers. The prodromal symptoms may be confined to malaise, headache and slight fever or may be more severe with nausea, vomiting and increasing pain.

Pain is the principal symptom and usually precedes the appearance of the herpetic eruption, although Nattkemper reports a case with typical eruption and facial palsy but no pain. The eruption is vesicular and confined to definite areas, depending on the ganglion involved. Facial palsy is common in the more severe cases. It is now considered that the lesion is not a ganglionitis in any limited sense but an infectious process involving all nerve structures, ascending or descending, and extending to the cortex in some cases. Exposure to cold, excessive heat, exhaustion and shock have been mentioned as predisposing factors. Apparently it is a matter of lowered individual resistance to invasion by the virus. The prognosis is generally favorable, although auditory function may be permanently damaged or lost. Apparently the spiral ganglion is least resistant to the virus and is the slowest to recover. The treatment is symptomatic, directed largely toward efforts for the relief of pain. Any definite focal infection that might have any bearing on a case should be cleared up if possible. During the last few years a number of workers have reported successful results from the use of roentgen therapy. This was used in two of the author's cases with apparent benefit.

**Climate and Upper Respiratory Tract Diseases.**—Montgomery deals with the relationship of climate to diseases of the upper respiratory tract but acknowledges the importance of all other factors. The nose is a factor in maintaining the water balance of the body, and the efficiency of its ciliary and other functions definitely depends on changes in climate. The incidence of head colds, while occurring about the same time of year over the entire continent and Europe, seems to be definitely related to changes in humidity and more especially to marked changes of temperature. A study of natural history suggests that the metabolic condition of all life, both wild and civilized, is affected by climatic changes. Patients suffering from tuberculous disease of the upper respiratory tract appear to do better in certain climates. Climate is a distinct factor in the etiology of diseases of the upper respiratory tract and consequently climate must be considered a factor in its treatment.

### Archives of Otolaryngology, Chicago

24: 271-412 (Sept.) 1936

- Treatment of Angioma of Face. F. A. Figi, Rochester, Minn.—p. 271.  
Safety Pin in Esophagus. L. H. Clerf, Philadelphia.—p. 282.  
Bronchial Foreign Body with Simultaneous Unilateral Emphysema and Collapse: Report of Case. I. Kubo, Tokyo, Japan.—p. 289.  
\*Chronic Infections in Pharynx: Pathologic Study. H. P. Schenck, Philadelphia.—p. 299.  
Clinical Significance of Compensatory Granular Pharyngitis. H. I. Lillie, Rochester, Minn.—p. 319.  
Frequency and Effect on Eustachian Tube of Residual Lymphoid Tissue in Nasopharynx. D. Roy, Atlanta, Ga.—p. 325.

**Chronic Infections in Pharynx.**—Schenck summarizes the histologic changes observed in biopsy material from the pharynxes of 108 patients with systemic manifestations of disease usually attributed to some form of focal infection. There was no specific alteration in the pharyngeal nodules in one type of disease that would differentiate them from the nodules occurring in another type of disease. Marked hyperplasia with chronic inflammatory change was the rule. Proliferation occurs early, and the increase in the number of polyblasts indicates a stimulation of or attraction for the reticulo-endothelial units. Increase of the number of polyblasts in the central portions of a follicle gives the appearance of a false germinal center. Edema occurs early, but later, when fibrosis is advanced, there is dilatation of the lymph channels due to obstruction and many of the dilated channels contain cellular elements, largely lymphocytes, but also plasma cells and large mononuclear cells. Obliteration of lymph channels seems invariably to result from sufficient proliferation of fibroblasts, but there is also proliferation of endothelial cells within the channels. The perifollicular lymph spaces were obliterated by fibrosis in the abnormal nodules. Hyperplasia of lymph nodules invariably appears to precede proliferation of fibrous tissue in chronic inflammation. The increase of young fibrous tissue elements is followed by a gradual and commensurate disappearance of lymph cells. Prior to the general dissolution of cells, the decrease in the number of lymph cells is coincident with and proportional to the increase in the number of polyblasts. Plasma cells were not numerous in abnormal pharyngeal nodules. Infiltration of the fibrous tissue about the nodules first appeared on that border

of the nodule which faced the epithelium; from this zone both the nodule and the epithelium became invaded. The terminal result of chronic inflammation of the nodule appeared to be a form of hyaline degeneration. No Aschoff nodules were distinguished in the sections from patients with articular pain or choreiform manifestations. If the various systemic effects observed in this series of patients are due to specific microorganisms or to specific viruses, there is certainly no comparable specificity in the coincident alteration of the pharyngeal tissue.

### Canadian Medical Association Journal, Montreal

35: 239-356 (Sept.) 1936

- \*Clinical Experiences with Protamine-Zinc-Insulin and Other Mixtures of Zinc and Insulin in Diabetes Mellitus. I. M. Rabinowitch, J. S. Foster, A. F. Fowler and A. C. Corcoran, Montreal.—p. 239.  
Results of Sympathectomy in Children. J. L. McDonald, Toronto.—p. 252.  
Rheumatic Infection in Childhood: Observations on Sedimentation Rate and Schilling Count. R. R. Struthers and H. L. Bacal, with technical assistance of Josephine Schacher and Madeline Flander, Montreal.—p. 258.  
Relationship of Maternal Anemia to Fetal Polycythemia. G. J. Strean and R. Gottlieb, Montreal.—p. 261.  
Surgeon's Responsibility in Treatment of Duodenal Ulcer. R. R. Graham, Toronto.—p. 263.  
Migraine. D. Slight, Montreal.—p. 268.  
Prognosis of Coronary Thrombosis. G. F. Strong, Vancouver, B. C.—p. 274.  
Avertin Anesthesia for Crippled Children. W. Bourne, Montreal.—p. 278.  
Further Report on Obstetric Analgesia and Amnesia. L. C. Conn and J. R. Vant, Edmonton, Alta.—p. 281.  
\*Bromide Intoxication. W. D. S. Cross, Guelph, Ont.—p. 283.  
Silicosis Research. F. G. Banting, Toronto.—p. 289.  
Silicosis and Its Incidence in British Columbia. C. H. Vrooman, Vancouver, B. C.—p. 293.  
Value of Blood Sugar Studies in Treatment of Damage to Birth Canal: Analysis of 257 Cases. C. V. Ward, Montreal.—p. 298.  
Radiologic Treatment of Cancer: Methods and Results 1928-1935: I. Biologic Conception of Dosage in Radiotherapy. G. E. Richards, Toronto.—p. 299.  
Blood Lipids in Leukemia. E. M. Boyd, Kingston, Ont.—p. 305.

### Clinical Experience with Protamine-Zinc-Insulin.

Rabinowitch and his associates state that blood sugar time curves obtained in diabetic patients following the administration of a mixture of protamine, insulin and zinc clearly indicated that this mixture was more effective in prolonging the hypoglycemic action of the injected insulin than protamine and insulin only. The results obtained in the human being confirm those of Scott and his co-workers in animals. A number of "insulin wasters" who had previously received treatment with regular insulin and later with protamine insulin were treated with the zinc mixture, and the results obtained show that, though the protamine insulin was more effective than the regular insulin, the control of the diabetes with the zinc mixture was almost perfect. The average insulin requirement in these cases during treatment with the protamine-zinc-insulin mixture was found to be approximately 25 per cent less than during treatment with protamine insulin. The average rate at which it was subsequently possible to reduce the insulin dosage was also found to be greater with the zinc mixture than with the protamine insulin. The addition of zinc to the protamine insulin increased the sensitivity of these patients to the injected insulin. Crystalline insulin was found to have a more prolonged action on the blood sugar than regular insulin, and in some cases its effects were equal to that of protamine insulin. The prolonged action of the crystalline insulin was evidently not due to its purity but to its zinc content. Equally good and in some instances better results were obtained by the addition of zinc to the regular commercial insulin. A number of observations suggest that under certain conditions it may not only be possible to inhibit totally the action of the injected insulin by the use of zinc but also to interfere with the action of endogenous insulin. Aside from the low toxicity of this metal, the possible accumulation of it in the body due to prolonged use of protamine-zinc-insulin is a negligible factor. However, in view of the natural occurrence of zinc in the pancreas in large quantities, it is possible that in zinc may be found the explanation of the resistance to insulin at times encountered in the diabetic state, particularly in infection. Also in zinc may be found the explanation of the transient occurrence of glycosuria occasionally present in infections in general.

**Bromide Intoxication.**—Cross says it is difficult to see how any epileptic patient could have escaped bromide poisoning, in some degree at least, and it is more than probable that many mental symptoms formerly ascribed to epilepsy were really manifestations of a superimposed bromide psychosis. In recent years, many preparations of the barbiturates have been introduced, which have tended to supplant bromides. In spite of this, bromides still have their place, particularly in conditions of nervous tension and anxiety. Their action is quite efficient and they have the added advantage of being inexpensive. Until quite recently little thought was given to the possibility that bromides might do harm to some patients. It was known for years that they produced a skin eruption at times, but this was usually looked on as an annoying and relatively harmless result. Most physicians seem quite surprised to learn that bromides can produce mental symptoms if improperly used. Ordinarily the toxic level is considered to be reached when the blood serum contains 150 mg. per hundred cubic centimeters. Symptoms may appear at lower levels, however, and occasionally are absent at higher concentrations. Bromide is easily demonstrated in the urine. Since the symptoms are predominantly mental, it is usually in psychiatric institutions that the greater number of these cases are detected. Bromide intoxications should be suspected in all toxic psychoses, especially when the onset of confusion and hallucinations has been sudden. It is unwise to wait for a bromide rash, as this is often absent. When administering bromides, it should always be ascertained whether the patient is taking any other form of medicine, the patient's habits regarding the taking of table salt and whether or not the fluid intake is ample. Bromide therapy should be discontinued at intervals, possibly one week out of four. The treatment consists of administering sodium chloride, which drives the bromide out of the tissues and replaces it, thus reversing the reaction occurring during its accumulation in the body. The author's practice has been to limit the use of intravenous saline solution to those who are severely dehydrated and to give the sodium chloride by mouth in all other cases in doses of 30 grains (2 Gm.) three or four times a day. The salt can also be given by rectum, but this is often difficult in a badly excited patient. It is very important to give fluids freely, and the diet should be liquid and of high caloric value.

### Journal of Biological Chemistry, Baltimore

115: 343-592 (Sept.) 1936. Partial Index

- Urate Distribution in Blood. J. H. Talbott and Jane M. Sherman, Boston.—p. 361.
- Relation of Serum Phosphates to Parathyroid Tetany. J. H. Jones, Philadelphia.—p. 371.
- Fractionation of Cholesterol in Blood by Precipitation as Pyridine Cholesteryl Sulfate and Cholesterol Digitonide. I. J. Drecker, A. E. Sobel and S. Natelson, Brooklyn.—p. 391.
- Distribution of Iron in Certain Tissues of Normal and Anemic Albino Rats. G. Wakeham and H. F. Halenz, Boulder, Colo.—p. 429.
- Isolation of Principal Estrogenic Substance of Liquor Folliculi. D. W. MacCorquodale, S. A. Thyayer and E. A. Doisy, St. Louis.—p. 435.
- Further Studies on Availability of Copper from Various Sources as Supplement to Iron in Hemoglobin Formation. M. O. Schultze, C. A. Elvehjem and E. B. Hart, Madison, Wis.—p. 453.
- Comparison of Calorigenic Potencies of *l*-Thyroxine, *d*-Thyroxine and Thyroid Gland: Note on Thyroxine Content of Acid-Soluble Fraction of Peptic Digest of Thyroid Protein. G. L. Foster, W. W. Palmer and Jessica P. Leland, New York.—p. 467.
- Ultraviolet Absorption Spectrum Curve of Phthiocol: Pigment of Human Tubercle Bacillus. M. O'L. Crowe, Albany, N. Y.—p. 479.
- Effect of Altitude on Affinity of Hemoglobin for Oxygen. F. G. Hall, Durham, N. C.—p. 485.
- Liver Proteins: I. Question of Protein Storage. J. M. Luck, Stanford University, Calif.—p. 491.
- Colorimetric Determination of Acetone by Salicylaldehyde Method. A. Ravin, Denver.—p. 511.
- Validity of Determinations of Hydrogen Ion Concentration of Whole Blood at Thirty-Eight Degrees with Glass Electrode. J. Sendroy Jr., T. Shedlovsky and D. Belcher, New York.—p. 529.
- Utilization of Glutathione in Connection with Cystine Deficient Diet. Helen M. Dyer and V. du Vigneaud, Washington, D. C.—p. 543.
- Studies in Histochemistry: IX. Quantitative Distribution of Vitamin C in Adrenal Gland at Various Stages of Development. D. Glick and G. R. Biskind, San Francisco.—p. 551.
- Multiple Nature of Third Factor of Vitamin B Complex. S. Lepkovsky, T. H. Jukes and Myrtice E. Krause, Berkeley and Davis, Calif.—p. 557.
- Studies of Phosphorus of Blood: V. Comparative Study of Acid and Enzymatic Hydrolysis of Acid-Soluble Organic Phosphorus, with Particular Reference to Phosphoglycerate Fraction. Edna Warweg and Genevieve Stearns, Iowa City.—p. 567.

### Journal of Clinical Investigation, New York

15: 475-590 (Sept.) 1936

- Acid-Base Equivalence of Blood in Diseases Associated with Hyperglobulinemia, with Especial Reference to Lymphogranuloma Inguinale and Multiple Myeloma. A. B. Gutman, Ethel Benedict Gutman, Ruth Jillson and R. D. Williams, New York.—p. 475.
- Placental Interchange: I. Concentration of Certain Nitrogenous Substances in Blood, Before and After Passing Through Placenta. W. T. Pommerenke, Rochester, N. Y.—p. 485.
- Ferrocyanide Clearance in Man. B. F. Miller, New York, and A. Winkler, New Haven, Conn.—p. 489.
- Pneumococcal Infections in Families. R. C. Tilghman and M. Finland, Boston.—p. 493.
- Bacteriologic and Immunologic Studies in Families with Pneumococcal Infections: Development of Type-Specific Antibodies in Healthy Contact Carriers. M. Finland and R. C. Tilghman, Boston.—p. 501.
- Experimental Induction of Erythema Nodosum. A. F. Coburn and Lucile V. Moore, New York.—p. 509.
- Variations in Serum Calcium and Phosphorus During Pregnancy: III. Effect on Fetal Circulation. J. W. Mull, Cleveland.—p. 513.
- Id.: IV. Effect on Body Stores as Shown by Ash of Rats. J. W. Mull, Cleveland.—p. 515.
- Sugars and Glycolytic Enzymes of Spinal Fluid in Epidemic Cerebrospinal Meningitis. R. S. Hubbard, N. G. Russell Jr. and Nellie M. Russell, Buffalo.—p. 519.
- Encephalitis in North China: Results Obtained with Neutralization Tests. Ann G. Kuttner and T'ung Ts'un, Peiping, China.—p. 525.
- Hemophilia: I. Abnormal Coagulation of Blood and Its Relation to Blood Platelets. A. J. Patek Jr. and R. P. Stetson, Boston.—p. 531.
- Experimental Hypertension: Observations on Sustained Elevation of Systolic and Diastolic Blood Pressure in Dogs. J. E. Wood Jr. and J. R. Cash, University, Va.—p. 543.
- Reticulocytosis in Guinea-Pig Following Injections of Gastric Juice and Congo Red. C. Mermoud, San Francisco.—p. 559.
- Comparison of Urea with Urea + Ammonia Clearances in Acidotic Dogs. R. F. Pitts, New York.—p. 571.
- \*Response to Insulin as an Index to Dietary Management of Diabetes. C. M. MacBryde, St. Louis.—p. 577.

**Response to Insulin as Index to Dietary Management of Diabetes.**—MacBryde made a study to determine whether diabetic patients who gain tolerance on high carbohydrate can be clinically distinguished from those who do not. The object was to find, if possible, a method for deciding on the optimal type of diet for each individual diabetic patient. Studies were planned to determine whether the two groups differed in their response to high carbohydrate diets. Observations have been made on the response of these patients to high and low carbohydrate diets, and the influence of these diets on the concentration of blood sugar, the glycosuria, the ketonuria, the insulin requirement, the dextrose tolerance and relative insulin sensitivity. The sensitive group of eight patients exhibited a marked fall in the blood sugar, ranging from 61 to 75 per cent of the fasting levels. All reached a blood sugar level of 68 or less, the average of the lowest determinations being 52 mg. per hundred cubic centimeters. Definite signs of hypoglycemia were observed in every patient of this group, and two experienced quite severe reactions. The relatively resistant patients showed much less response. The fall ranged from 32 to 53 per cent; none reached a point below 71 mg. per hundred cubic centimeters, and the average of the lowest determinations was 90 mg. Signs of hypoglycemia were minimal or absent. Intravenous insulin tolerance tests on three of the patients in each group indicated that possible differences in absorption of the subcutaneous insulin could not explain the observed differences in response. In each instance a patient sensitive to subcutaneous insulin was found also to be sensitive to intravenous insulin. Those relatively resistant showed relatively poor response to both the subcutaneous and the intravenous injections. The tolerated overdose in those patients found to be sensitive in the insulin tolerance tests was in every case practically zero. An increase of as much as 3 or 5 units produced hypoglycemia, while a reduction of 3 or 5 units below the required amount led promptly to glycosuria and hyperglycemia. In the resistant group, however, increase in the insulin dosage had a relatively slight effect. The dextrose equivalents, representing the number of grams of dextrose metabolized per unit of insulin, was found to be higher in the insulin-sensitive group. On the average, there appears to be approximately four times as much effect per unit in the sensitive group as in the resistant group. Those patients showing relative resistance are usually older, frequently are obese and often have vascular hypertension. There is little tendency to acidosis, while the sensitive group develop acidosis and coma much more easily. The sensitive group are usually younger, are often thin and have as a rule low blood pressures.

It is doubtful, however, whether clinical features alone will serve to distinguish the two types. They cannot be distinguished as to severity, since the insulin requirement is on the average higher in the resistant group; but acidosis occurs more frequently in the sensitive type. The relatively resistant group without exception gained tolerance on a high carbohydrate intake. In several instances this was shown to be accompanied by increased sensitivity to insulin. The insulin-sensitive patients resemble in many respects the partially pancreatectomized animal. They respond well to exogenous insulin but seem to produce too little of the endogenous hormone. When subjected to the excessive burden of a high carbohydrate intake they may lose tolerance, perhaps as the result of overburdening the damaged or numerically decreased pancreatic islets. Relatively resistant patients, however, react as if the endogenous insulin supply were adequate in amount but operating under the handicap of inhibiting factors.

### Journal Industrial Hygiene and Toxicology, Baltimore

18: 371-470 (Sept.) 1936

- \*Poisoning by Vapors of Beryllium Oxyfluoride. I. Gelman, Moscow, U. S. S. R.—p. 371.  
Clinical Studies on Lead Absorption in Human: III. Blood Pressure Observations. E. L. Belknap, Milwaukee.—p. 380.  
Lead Burning: Report on "Exhausted Blow Pipe." R. E. Lane, Manchester, England.—p. 391.  
Effects of Social Environment. L. J. Henderson and E. Mayo, Boston.—p. 401.  
Industrial Fatigue. D. B. Dill, A. V. Bock, H. T. Edwards and P. H. Kennedy, Boston and Youngstown, Ohio.—p. 417.  
Etiologic Studies on Formation of Skin Blisters in Viscose Workers. W. C. Hueper, Wilmington, Del.—p. 432.  
Toxicity of Dioxan. H. H. Schrenk and W. P. Yant, Pittsburgh.—p. 448.  
Carbon Monoxide Poisoning from Compressed Air. N. R. Bernz and P. Drinker, Boston.—p. 461.  
\*Contact Dermatitis Caused by Jonquil (*Narcissus Jonquilla*). G. V. Stryker, St. Louis.—p. 462.

**Poisoning by Vapors of Beryllium Oxyfluoride.**—Gelman states that the first phase of the clinical course of this industrial poisoning consists of a feverish state following the work in the foundry, which is like metal-fume fever. The second phase usually develops gradually two, three, four or more days afterward and can be characterized as an extensive bronchiolo-alveolitis, with a tendency to relapses and exacerbations. Its symptoms are severe dyspnea, cyanosis, paroxysmal coughing and high temperature. Pneumonic complications are rare. Edema of the lungs has not been observed.

**Contact Dermatitis Caused by Jonquil (*Narcissus Jonquilla*).**—The narcissus, which belongs to the natural order Amaryllidaceae, has more than 100 subvarieties. Among these the most widely grown are the daffodil (*Narcissus pseudonarcissus*) and the jonquil (*Narcissus jonquilla*). An operator of a large greenhouse in St. Louis County consulted Stryker because of a severe eruption of his hands. An acute, vesicular dermatitis appeared on the sides and backs of both hands in February 1935 and continued until April 1935. His hands were well until October of the same year, when a second and more severe attack occurred. At the time of examination, December 1935, the backs of the hands were covered with an acute, scaly, red, vesicular dermatitis. The patient volunteered the information that, though he was sensitive to chrysanthemum, he felt that his condition was due to jonquils, as he was working with them when the attacks occurred. Patch tests were done with all substances with which the patient was known to come in contact. Chrysanthemum produced an erythema, jonquil sap an erythema and vesiculation, jonquil stalk an erythema and vesiculation, and jonquil petal an erythema. All other substances tested gave a negative result. Improvement and complete cure followed the removal of the contact. A recurrence was experienced following a short exposure while visiting a greenhouse in another city. Following this experience the patient has remained well and he continues to avoid contact with the narcissus. Investigation of the greenhouse in question revealed that out of a total of fifty employees about 20 per cent were known to be affected by handling narcissus. Examination of five volunteers showed that they had a dermatitis of the hands and arms. The eruption varied from a few small patches to an involvement of the exposed parts. The time of employment was four, seven, twelve, fifteen and twenty years, respectively.

### Journal of Lab. and Clinical Medicine, St. Louis

21: 1217-1330 (Sept.) 1936

- Pathogenesis of Tuberculous Leptomeningitis. A. B. Ragins, Chicago.—p. 1217.  
\*Blood Sedimentation Rates in Middle-Aged and Old People. I. Miller, Staten Island, N. Y.—p. 1227.  
Frequency and Significance of Changes of Expiratory Chest Volume During Routine Measurement of Basal Oxygen Consumption. J. A. Greene, with technical assistance of Muriel Ward, Iowa City.—p. 1231.  
Action of Magnesium in Guanidine Intoxication. J. M. Saunders, Nashville, Tenn.—p. 1236.  
Pain and Weather. W. P. Elhardt, Urbana, Ill.—p. 1247.  
Gastro-Intestinal Manifestations of Hyperthyroidism: Analysis of Eighty Cases of Hyperthyroidism with Report of Four Cases Masked by Digestive Symptoms. M. Scarf, Philadelphia.—p. 1253.  
Red Blood Cell Sedimentation Rate in Chronic Sinusitis, Chronic Tonsillitis and Dental Periapical Infections. R. M. Lintz, New York.—p. 1259.  
Subacute Bacterial Endocarditis Produced in Rabbits with Streptococci That Resemble Diphtheroids. H. Welch, T. P. Murdock and J. A. Ferguson, Meriden, Conn.—p. 1264.  
Leukopenic Index in Vasomotor Rhinitis. M. Zeller, Chicago.—p. 1274.  
Leukopenic Index as Diagnostic Method in Study of Food Allergy, with Discussion of Its Reliability. W. T. Vaughan, Richmond, Va.—p. 1278.  
Laboratory Diagnosis of Blastomycosis. D. S. Martin and D. T. Smith, Durham, N. C.—p. 1289.  
Schilling's Hemogram. E. M. Schleicher, Detroit.—p. 1296.  
Mouse Box for Operating on Tail. A. J. Galarie, New York.—p. 1302.  
Use of Polar Diagram in Charting Incidence of Disease. J. W. Williams, Cambridge, Mass.—p. 1303.  
Employment of Oxalated Plasma in Bromsulfalein Dye Retention Test. C. A. Dragstedt and M. A. Mills, Chicago.—p. 1306.  
Improved System of Filing Surgical Reports and Slides. W. L. Robinson, Toronto.—p. 1308.  
Use of Liquid Air in Cooling Knives and Gelatin for Mounting in Frozen Section Technic. S. C. Werch, Eloise, Mich.—p. 1309.
- Blood Sedimentation Rates in Old Persons.**—To ascertain whether the sedimentation rate would be a simple method of diagnostic value in the examination of the aged, Miller made 621 sedimentation rates on 496 apparently normal old men during the routine admission examinations to the New York City Farm Colony. The study concerns itself with men more than 50 years of age. Degenerative diseases are in the ascendency in this group, and the sedimentation rate is not affected by degenerative changes, as 66 per cent of the patients had rates under 10 per cent, and 86 per cent had rates under 20 per cent. Age has little effect on the sedimentation rate. The slight variations present are due to the different number of cases in the various age groups. The daily wear and tear of body tissue cause only slight changes in the rate, and it remains within normal limits. Tissue destruction, whether inflammatory or neoplastic in origin, causes an increase in the sedimentation rate. The test is not diagnostic of any disease, but an increased rate in an apparently normal person should be viewed with suspicion and call for further investigation. Malignant manifestations, when localized, do not cause an increased sedimentation rate; only when necrosis, secondary infection and metastases occur are the rates increased. A single normal sedimentation rate does not rule out a malignant condition. Of twenty-nine cases of diabetes, 52 per cent showed an increase in the sedimentation rate. The author's tuberculous patients are mainly old fibrotic cases with negative sputums, and their sedimentation rates vary from normal to very high. One patient with a rate of 28 per cent advanced within six months to 45 per cent, at which time the sputum was Gaffky VI and a roentgenogram showed an advancement of the lesion. The patients with syphilis, like those with tuberculosis, had rates varying from normal to very high. The tabetic patients had normal rates, while those with central nervous system and cardiovascular involvement had increased rates.
- Journal of Nervous and Mental Disease, New York**  
54: 249-372 (Sept.) 1936
- Psychogenic Aspects of Skin Diseases. J. V. Klauder, Philadelphia.—p. 249.  
Oxycephalus: Premature Synostosis of Cranial Sutures: Prevention of Blindness by Craniectomy and Decompression: Two Case Reports. A. E. Bennett, J. J. Keegan and H. B. Hunt, Omaha.—p. 274.  
Sciatic Causalgia Due to Nerve Trunk Ischemia. L. J. Karnosh, Cleveland.—p. 283.  
Behaviorism and the New Logic. P. L. Harriman.—p. 290.  
Relationship of Intellect to Speech Defect in Aphasic Patients. F. Kennedy and A. Wolf, New York.—p. 293.  
Increased Cerebrospinal Fluid Protein in Brain Tumors: Preliminary Report. J. S. Deane, New York.—p. 312.

**Journal of Pharmacology & Exper. Therap., Baltimore**

58:1-118 (Sept.) 1936

- Modified Pigeon Method for Bio-Assay of Antipernicious Anemia Liver Extracts. G. E. Wakerlin, H. D. Bruner and J. M. Kinsman, Louisville, Ky.—p. 1.  
Absorption of Ferrous and Ferric Compounds from Intestines of Rabbits. O. Fürth and R. Scholl, Vienna, Austria.—p. 14.  
Effect of Sympathectomy on Sensitivity to Adrenalin of Bronchioles. Co-Tui, C. L. Burstein and A. M. Wright, New York.—p. 33.  
Studies on Persistence of Action of Digitalis and Digitalis Bodies. H. B. Haag, Richmond, Va.—p. 42.  
Comparison of Pressor Effects of Some New Alkyl Derivatives of  $\beta$ -Phenylethylamine. W. E. Hambourger and R. B. Jamieson Jr., New Haven, Conn.—p. 53.  
Local Anesthetic Activity of Quinoline Compounds. H. K. Sinha, Edinburgh, Scotland.—p. 62.  
Effect of Oxygen Inhalation on Course of Acute Alcoholic Intoxication. T. C. Butler, Nashville, Tenn.—p. 68.  
Relative Anesthetic Activity of Butanes and Pentanes. R. W. Stoughton and P. D. Lamson, Nashville, Tenn.—p. 74.  
Studies on Insulin with Protamine. D. A. Scott and A. M. Fisher, Toronto.—p. 78.  
Effect of Various Substances on Action of Insulin. A. M. Fisher and D. A. Scott, Toronto.—p. 93.  
Studies on Synergism and Antagonism of Drugs: II. Action of Physostigmine on Autonomic Ganglions. T. Koppányi, J. M. Dille and C. R. Linegar, Washington, D. C.—p. 105.  
Influence of Anesthetic on Results of Digitalis Assay by Cat Method of Hatcher and Brody. C. C. Haskell, Brooklyn.—p. 111.

**Journal of Urology, Baltimore**

36:189-304 (Sept.) 1936

- Founding of American Urological Association with Tribute to Its Founder: Dr. Ramon Gutiérrez. C. L. Begg, New York.—p. 189.  
Acute Suppurative Thrombophlebitis of Renal Vein. A. Hyman, New York.—p. 196.  
Variations in Number and Arrangement of Renal Vessels: Study of Blood Supply of 400 Kidneys. B. J. Anson, G. A. Richardson and W. L. Minear, Chicago.—p. 211.  
Compression of Upper Ureter by Sarcomatous Retroperitoneal Lymph Gland: Report of Case. P. Katzen, New York.—p. 220.  
Postcaval Ureter: Two Cases. V. J. Derbes and W. A. Dial, New Orleans.—p. 226.  
Vaginal Ureterolithotomy: Case Report. A. E. Hiebert, Topeka, Kan.—p. 234.  
\*Cysts of Prostate Gland. J. L. Emmett and W. F. Braasch, Rochester, Minn.—p. 236.  
Impotence. E. G. Ballenger, O. F. Elder and H. P. McDonald, Atlanta, Ga.—p. 250.  
Effects of Some Nervous System Lesions on Genito-Urinary Mechanisms. F. Kennedy and S. B. Wortis, New York.—p. 255.  
Surgery of Autonomic System of Urinary Tract. F. C. Grant, Philadelphia.—p. 261.  
Gonadotropic Factor as an Aid to Surgery in Treatment of Undescended Testicle. C. L. Denning, New Haven, Conn.—p. 274.  
Use of Beta-Hydroxybutyric Acid and Certain of Its Salts as an Adjunct in Treatment of Infections of Urinary Tract. E. N. Cook, Rochester, Minn.—p. 289.  
Deep Tissue Suture Needle. P. J. Riaboff, New York.—p. 298.  
Improved Urethral Filiform Guide. F. C. Hendrickson, Canton, Ohio.—p. 300.  
Demonstration of Multicolored Corrosion Specimens. J. Narat, Chicago.—p. 301.

**Cysts of Prostate Gland.**—Emmett and Braasch divide cysts of the prostate gland into congenital and acquired. Cysts of any significance are the congenital cysts, retention cysts and cysts that occur in connection with carcinoma of the prostate gland. Congenital cysts are rather uncommon, and one often is at a loss to explain the mechanism of their formation. The simple retention cyst may arise in any portion of the prostate gland and is nothing more than a normal prostatic acinus lined with simple columnar epithelium, the outlet of which for some reason has become occluded, forcing the acinus to expand. Because of the dilatation, the epithelium becomes thinned, so that the microscopic examination reveals that the inner wall is lined with flattened columnar epithelium. If the cyst is situated near the surface of the prostate gland and projects into the urethral lumen or bladder, the outside of the cyst will be covered with the corresponding mucous membrane of the urethra or bladder. One side of the cyst is practically always well embedded in prostatic tissue. This is not the only mechanism in the production of a cyst. The authors have seen many sections in which the walls of neighboring dilated acini were breaking and rupturing into one another and producing one large dilated acinus or small cyst. It is difficult to distinguish a large dilated prostatic acinus from a small cyst. Because of the frequent occurrence of these smaller prostatic cysts, the authors have chosen to report only the fourteen cases in which

the cyst measured 0.75 cm. or more in diameter. Seven of these cysts were found accidentally at necropsy. Six of these had produced no symptoms, while one was associated with a marked hypertrophy of the median lobe of the prostate gland, which was producing symptoms of urinary obstruction. Three of the cysts were found in prostate glands that were removed suprapubically because of prostatic hypertrophy and urinary obstruction, while the remaining four cysts were diagnosed clinically. Thirteen of these fourteen cysts were of the simple retention type, while one was thought to be a congenital cyst, probably produced by nonobliteration of the müllerian ducts or wolffian bodies. The symptoms produced by a cyst of the prostate are purely expressions of the mechanical difficulties involved. With the modern cystoscopic equipment the diagnosis of a prostatic cyst that projects into the prostatic urethra or bladder is not difficult. Most of the prostatic cysts that have been discovered in the course of cystoscopy can be treated by fulguration or transurethral resection. The smaller retention cysts that are palpated in the course of rectal examination and that do not produce any symptoms are probably best left alone. Aspiration has been advocated, but the usual result is simply a refilling of the cyst. Large cysts in inaccessible situations may necessitate a suprapubic or perineal operation. There is no doubt that retention cysts of the prostate sometimes do rupture and disappear spontaneously.

**Military Surgeon, Washington, D. C.**

79:169-250 (Sept.) 1936

- Specialism and Postgraduate Training in the Medical Department of the Navy. P. S. Rossiter.—p. 169.  
Immunologic Consideration of Virus Problem. H. Zinsser.—p. 171.  
Marine Hospitals and Beneficiaries of the Public Health Service. S. L. Christian.—p. 182.  
Admission to the Medical Department of the Army Half a Century Ago: Experience of Brigadier General William Hemple Arthur. E. E. Hume.—p. 197.  
New Pack Saddle Litter (for the Panama Jungles). T. E. Scott.—p. 203.  
Experiences of Army Medical Officer During the San Francisco Earthquake. H. H. Rutherford.—p. 207.  
Diet Insurance. W. H. Eddy.—p. 215.  
New Surgical Technic: Combined Appendectomy-Herniotomy Incision. G. C. Kirk.—p. 219.  
Suggested Plan of Filing Case for Records in CCC Camps. J. H. Whiteley and F. Johnson.—p. 221.

**New England Journal of Medicine, Boston**

215:421-478 (Sept. 3) 1936

- Use and Abuse of Blood Transfusions. A. V. Bock, Cambridge, Mass.—p. 421.  
Some New and Unfamiliar Industrial Poisons. Alice Hamilton, Hadlyme, Conn.—p. 425.  
Newer Concepts of Liver Disease. C. M. Jones, Boston.—p. 432.  
Sodium Chloride Therapy. A. S. Johnson, Springfield, Mass.—p. 438.  
A General Practitioner's Views on Treatment of Angina Pectoris. J. Sproull, Haverhill, Mass.—p. 443.  
Progress in Surgery of Autonomic Nervous System in 1935. J. C. White, Boston.—p. 453.

215:479-516 (Sept. 10) 1936

- Pathogenesis of Circulatory Failure. T. R. Harrison, Nashville, Tenn.—p. 479.  
Limitations of Roentgen Method of Diagnosis. H. W. Van Allen, Springfield, Mass.—p. 482.  
Vascular Nevi and Their Treatment. J. H. Blaisdell, Boston.—p. 485.  
\*Arachnidism. A. S. Hargis, Swainsboro, Ga.—p. 489.  
Oliver Wendell Holmes: Anatomist, Autocrat, Poet. R. M. Green, Boston.—p. 493.  
Acute Traumatic Pectus Excavatum. W. R. MacAusland, Boston, and M. A. Tighe, Lowell, Mass.—p. 496.

**Arachnidism.**—Hargis has devised a routine treatment for spider bite cases. One-fourth grain (0.016 Gm.) of morphine sulfate is given, repeated, if necessary. Calcium gluconate, 10 cc. of a 10 per cent solution, is given intramuscularly and frequently repeated if necessary. Dextrose, 50 cc. of a 50 per cent solution, is given intravenously and also repeated if necessary. The patient is immersed in a hot tub for an hour or more, once or more often if necessary. Then he is put to bed, covered well and kept warm, preferably with a radiant light. Fluids are forced and constipation and urinary retention are avoided. Of the forty-three cases of arachnidism that have been admitted to the hospital in the last fifteen years there have been no fatalities.

## New Orleans Medical and Surgical Journal

89: 157-210 (Oct.) 1936

- Acute Appendicitis: Acute Appendicitis in Children. J. Signorelli, New Orleans.—p. 157.  
 Id.: Medical Aspects of Appendicitis. O. W. Bethea, New Orleans.—p. 162.  
 Id.: Appendicitis as Community Health Problem. C. C. Dauer, New Orleans.—p. 164.  
 Id.: Part Played by the Surgeon in Lowering Mortality of Acute Appendicitis. A. H. Storck, New Orleans.—p. 165.  
 Id.: Presentation of Acute Appendicitis in Standard Text Books and Systems. F. F. Boyce and Elizabeth M. McPetridge, New Orleans.—p. 167.  
 Lobar Pneumonia. M. Smith, Jennings, La.—p. 174.  
 Mycotic Infections of Lungs. D. M. Moore, Monroe, La.—p. 180.  
 Jaundice. F. Hagaman, Jackson, Miss.—p. 183.  
 Induced or Artificial Fever. H. R. Unsworth, New Orleans.—p. 189.  
 Physical Therapy in Chronic Rheumatic Diseases. J. S. Coulter, Chicago.—p. 192.

## New York State Journal of Medicine, New York

26: 1277-1362 (Sept. 15) 1936

- Rôle of Thymus and Pineal Glands in Growth and Development. L. G. Rowntree, J. H. Clark, A. Steinberg, N. H. Einhorn, Philadelphia, and A. M. Hanson, Faribault, Minn.—p. 1277.  
 Surgery in Essential Hypertension. F. S. Wetherell, Syracuse.—p. 1284.  
 \*Artificial Fever Therapy of Syphilis and Gonococcal Infections. W. M. Simpson, Dayton, Ohio.—p. 1290.  
 Determining Industrial Nature of Dermatitis. M. B. Sulzberger, New York.—p. 1307.  
 Family Periodic Paralysis: Use of Tissue Extract. S. Vernon, Williamantic, Conn.—p. 1310.  
 \*Endocrine Study of Hypogonadism and Cryptorchidism. M. B. Gordon, Brooklyn.—p. 1313.  
 Allergic Manifestations to Cow's Milk. C. G. Kerley, New York.—p. 1320.  
 Selective Oleothorax: Case Report. C. E. Hamilton and E. Rothstein, Brooklyn.—p. 1323.  
 Between Mental Health and Mental Disease. B. Liber, New York.—p. 1325.

**Artificial Fever Therapy of Syphilis and Gonococcal Infections.**—Simpson has given artificial fever treatments to 193 patients, under observation for from six months to four and one-half years, on account of syphilis or gonococcal infection. There were thirty-one patients who received treatment for primary and early secondary syphilis and eighty-nine for neurosyphilis, ocular syphilis or resistant seropositive syphilis. Forty-five patients were treated for gonococcal arthritis, and twenty-eight patients received treatment for gonococcal infection other than gonococcal arthritis. With two exceptions, all persons with syphilis were treated as ambulatory patients. Patients with gonococcal infections have been admitted to the hospital for a period of two weeks. This plan permits close supervision of the patient and eliminates the uncooperative patient. Artificial fever therapy by physical means should be restricted to institutions in which the physician and nurse personnel have received adequate preliminary training. In the hands of skilled and devoted workers this form of therapy seems destined to occupy an increasingly important place in therapeutics. The frequent observation that the best results occurred when neurosyphilis was treated with combined fever and chemotherapy during its earliest manifestations led the author to apply the treatment to patients with primary or early secondary syphilis. The results provide evidence that fever therapy may be of great value in early syphilis, particularly when chemotherapy alone appears to be inadequate. The results obtained in the treatment of symptomatic neurosyphilis, asymptomatic neurosyphilis, ocular syphilis and resistant seropositive syphilis are at least comparable, if not superior, to the results obtained with the more hazardous, time consuming and inconstant malaria therapy. There is evidence that artificial fever therapy fortifies and intensifies the action of antisyphilitic chemotherapeutic agents. High, sustained, controlled artificial fever is the treatment of choice for gonococcal arthritis. Gonococcal arthritis is a manifestation of a systemic disease, requiring systemic treatment. In vitro thermal death time studies and the clinical response of patients with gonococcal infections to artificial fever therapy indicate that it is possible in most instances to destroy gonococci in the various lesions of the disease with high, sustained body temperature. In addition to this sterilizing effect, there is evidence that artificial fever therapy stimulates immune reactions. In twenty-eight patients with gonococcal infection, other than gonococcal arthritis, all evidence of gonococcal urethritis and its complications had disappeared in twenty-five

(89 per cent) at the conclusion of the course of fever therapy. The remaining three patients received apparently inadequate fever therapy.

**Study of Hypogonadism and Cryptorchidism.**—In a review of the records of 521 boys with endocrine or non-endocrine conditions, Gordon found that hypogonadism and cryptorchidism occur almost twice as frequently in the endocrine as in the nonendocrine group. Studies on thirty-eight boys with cryptorchidism and thirty-six with hypogonadism with descended testes show on the average a thyropituitary deficiency as manifested by low basal metabolic rate, low specific dynamic action of proteins and high blood values of cholesterol, chlorides and uric acid. The treatment of cryptorchidism in this series is based on the assumption that it is a symptom in the majority of instances of a disturbed thyropituitary-gonad relationship and not a clinical entity. Three methods are used: (1) oral administration of thyroid and anterior pituitary extracts in increasing dosage, (2) oral administration of thyroid and anterior pituitary extracts and hypodermic injection of anterior pituitary extract and (3) oral administration of thyroid and anterior pituitary extracts and hypodermic injection of anterior pituitary-like extract. Complete descent of the testes was obtained with the three methods as follows: first, 33 per cent; second, 50 per cent; third, 57 per cent. The treatment of cryptorchidism by any of the methods used may be effectual at any age between 2 and 14 years but is more effective after 5 years. No boy should be subjected to an operation for undescended testicles until he has been given the benefit of organotherapy for at least six months. Hypogonadism, especially when associated with adiposogenital dystrophy and hypothyroidism, responds in the majority of instances to oral administration of thyroid and anterior pituitary extracts and hypodermic injections of anterior pituitary extract. Extract of pregnant urine is necessary only in the stubborn and protracted cases. Improvement in the basal metabolic rate, specific dynamic action, general endocrine condition and obesity is generally but not always accompanied by the same degree of improvement in the hypogonadism and cryptorchidism. The effects on the phallus, scrotum and testes are not parallel. Untoward effects may result from the use of either anterior pituitary or anterior pituitary-like extracts.

## Northwest Medicine, Seattle

35: 325-364 (Sept.) 1936

- Present Day Conception of Shock. W. J. Meek, Madison, Wis.—p. 325.  
 Practical Points in Medical Treatment of Arthritis. K. K. Sherwood, Kirkland, Wash.—p. 334.  
 Wounds and Their Repair. J. A. Wolfer, Chicago.—p. 339.  
 \*Treatment of Empyema of Children by Aspiration. J. B. Bilderback and S. H. Goodnight, Portland, Ore.—p. 342.  
 \*Allergy as Cause of Frequent Colds and Chronic Coughs in Children. N. W. Klein, Seattle.—p. 347.

**Treatment of Empyema of Children.**—Bilderback and Goodnight have treated thirty-two consecutive cases of empyema with a mortality of 6.2 per cent. There were twenty-one cases of metapneumonic empyema and eleven synpneumonic. Twenty-three have been treated by aspiration alone. The average number of aspirations per patient has been twelve. The average number of thoracenteses necessary for the patient to become and stay afebrile was eight. The average number of days for the patient to become and stay afebrile was twenty. The average number of days in the hospital after the last thoracentesis was sixteen. The average hospital stay was forty-two days from the time diagnosis was made. Nine patients have had closed drainage. The average number of aspirations before surgery was five. The average number of days after the diagnosis was made before surgery was twelve. Twenty-one of the thirty-two cases have been admitted in the last four months. Nineteen of these have been treated with repeated aspirations, or 90.4 per cent, in comparison with 42.5 per cent for the first six months. The authors perform thoracentesis with the patient in the sitting position. A little codeine given before aspiration often helps in keeping the child quiet. Infiltration with 1 per cent solution of procaine hydrochloride is then done. A fine 26-gage needle is used for infiltrating the deeper structures including the pleura. When the pleura is penetrated there is a definite "give" to the needle. Aspiration is then done to make sure the needle is in the empyemic cavity. A 13 gage needle with a side opening connected with a rubber tube clamped

with a hemostat is then introduced. A 50 cc. syringe is connected to the tube, the hemostat opened and 50 cc. of pus withdrawn. This is replaced with 40 cc. of air. The process is repeated until air is obtained in the syringe. The cavity is then irrigated with 1:3,300 azochloramide solution until the return is clear. As long as the patient is febrile and there is fluid present on physical examination or fluoroscopy, aspiration should be done daily until he is afebrile. Thoracenteses are then done as necessary according to the child's condition (fever, pulse, appetite and general condition) or according to the fluoroscopic observations. The authors cannot agree with Danna that it is necessary to empty the cavity completely. Although it may be necessary to remove fluid for a short time after the patient is afebrile, suddenly the fluid will not reaccumulate and the little remaining fluid will rapidly absorb. This has been true in practically every case. In replacing the fluid with air the patient is made more comfortable without any danger of a large mediastinal shift. It undoubtedly helps to prevent adhesions. There is less damage to the pleura and there is less danger of puncturing the lung. More complete emptying of the cavity is possible, as the pleura does not come in contact with the needle. Immobilization and rest of the diseased lung is brought about, which aids in healing the focus of infection, without which healing will not take place no matter what the treatment. The air is slowly absorbed, restoring the negative pressure. When the air is absorbed, the cavity is obliterated. Aspiration plays an important part in the surgical treatment of empyema. Diagnostic puncture should always be made to learn the type of fluid and organisms. Aspiration is the method of choice to relieve pressure and toxemia without shock and to get patients in good condition for surgery. A small percentage of the patients are cured before surgery.

**Allergy as Cause of Colds and Coughs.**—Clein warns that the children presenting the symptoms of frequent colds and chronic coughs have usually visited many physicians. Nevertheless, the true condition is probably overlooked more often than any other common present day disease. These patients have received many types of treatment in an effort to relieve the persistent symptoms. Their history usually states that they have had tonsil and adenoid removal one or more times, "cold shots," vitamin D products, light treatments, sinus treatments or have been sent to a warmer climate for the winter, all with no relief. In fact, they are usually worse. This history should immediately put the physician on his guard to make him think in terms of allergy. In the diagnosis of acute and chronic rhinitis, croup, paranasal sinusitis, laryngitis, tracheitis and bronchitis the possibility of allergy must be considered. In children, acute and chronic infections may obscure a primary underlying allergic condition. The most constant symptom of nasal allergy is a "stuffy nose which is always worse on arising in the morning." A chronic cough, occurring especially during the early morning hours, is a preasthmatic symptom. Treatment on the basis of elimination and specific desensitization of pollens, epidermals and dust gives excellent results in children.

### Ohio State Medical Journal, Columbus

32: 797-924 (Sept. 1) 1936

- \*Causes for Failure in Treatment of Diabetes. R. W. Finley, Cleveland.—p. 813.  
Indications for Splenectomy. R. W. Good, Cincinnati.—p. 817.  
Some Clinical Observations on Maxillary Antrum. E. King, Cincinnati.—p. 821.  
Significance of Midpelvic Trapezoid. J. P. Gardiner, Toledo.—p. 824.  
Strongyloides Stercoralis. E. A. Wagner, Cincinnati.—p. 826.  
Chronic Gastritis, Duodenitis and Their Relation to Peptic Ulcer. W. Stix, Cincinnati.—p. 829.  
End Results of Treatment of Lung Abscess. S. O. Freedlander, Cleveland.—p. 832.  
Situs Inversus Viscerum. A. C. Siddall, Oberlin.—p. 836.  
Surgical Causerie: Desultory Discussion of Certain Commonplace Features of Surgical Practice Often Ignored as Simple and Obvious But Worthy of Restatement and Emphasis. L. L. Bigelow, Columbus.—p. 837.  
Treatment of Abortions. J. D. Heiman and J. M. Stevenson, Cincinnati.—p. 844.  
Intracranial Arteriovenous Aneurysm: Case Report: Recovery After Internal Carotid Artery Ligation. M. D. Friedman and H. M. Gans, Cleveland.—p. 849.  
Management of Cross Eyed Children. H. V. Phelan, Cleveland.—p. 851.

**Causes for Failure in Treatment of Diabetes.**—Finley divides the treatment of diabetes into three parts. 1. To clear up or prevent the immediate symptoms of dextrose deprivation,

such as glycosuria, dehydration, malnutrition and the profound cellular chemical changes antecedent to and productive of severe acidosis and coma. 2. To guard the patient against considering his diabetes a threat against his self esteem. 3. To help the patient evolve a plan or pattern of dietary and therefore of social and work conduct, which he is willing to follow and which gives most promise of avoiding the development or the advance of arteriosclerosis. These three objects run concurrently and are best begun at the first conference with the patient. Undernutrition must be avoided and a hyperglycemia alone or a glycosuria alone cannot be accepted as a trustworthy evidence of the condition. Attempts to keep a patient on a diet too low in nutritional value in order to clear the urine of sugar when the blood sugar is within acceptable limits, to keep a blood sugar at some conventionally accepted normal level when the kidneys are not leaking sugar or to avoid the use of insulin cannot be accepted as the best medical practice, because it may be using a state of undernutrition as the means to treat a chemical change. Persistent glucosuria, when present with persistent hyperglycemia, is bound to lead sooner or later to undernutrition and must be cleared if possible. Glycosuria in the absence of a chronic focus of infection is due to a delayed absorptive activity of the tubules of the kidney, which returns the sugar from the glomerular urine to the blood. The logical treatment seems to be to allow a diet which yields enough dextrose to supply both that lost in the urine and that needed to maintain a normal state of nutrition, and then to follow the blood sugar more frequently than would be called for otherwise in order to be sure that the glycosuria and a hyperglycemia are not occurring together.

### Oklahoma State Medical Assn. Journal, McAlester

29: 309-346 (Sept.) 1936

- Fever Therapy in Ocular Manifestations of Syphilis. A. N. Lemoine, Kansas City, Mo.—p. 309.  
Problem of Treatment of Cancer of Breast. R. E. Myers, Oklahoma City.—p. 314.  
Visceral Injuries. F. A. Hudson, Enid.—p. 319.  
Digitalis: Its Uses and Abuses. G. H. Niemann and D. M. Gordon, Ponca City.—p. 324.  
Prenatal Care, with Especial Reference to External Version. H. M. McClure, Chickasha.—p. 327.  
Intranasal Oxygen Therapy. H. K. Speed, Sayre.—p. 330.

### Philippine Islands Med. Association Journal, Manila

16: 461-534 (Aug.) 1936

- Embryonated Eggs of Ascaris Lumbricoides in Mesenteric Tissue of Man, with Especial Reference to Possibility of Autoinfestation. C. M. Africa and E. Y. Garcia, Manila.—p. 461.  
Maternal Mortality in the Philippines: Study of Statistical Records of Bureau of Health, Manila, from 1930 to 1934. F. Z. Cruz, Manila.—p. 469.  
Carcinoma of Ovary in Childhood. F. W. Meyer, Capiz, Capiz.—p. 477.  
Hysteria: I. Hysterical Simulation of Organic Diseases. G. F. Austria, Manila.—p. 481.  
Id.: II. Mystery Woman from Cagayan. A. L. Chavez, Manila.—p. 489.  
Id.: III. Interpretation of Clinical Findings. W. Vitug, Manila.—p. 495.

### Philippine Journal of Science, Manila

59: 149-316 (Feb.) 1936. Partial Index

- Effect of Bile on Viability and General Biology of Intestinal Pathogenic Bacteria. O. Schöhl, M. Nukada and T. Komatsu, Owori, Tokyo, Japan.—p. 149.  
\*Certain Factors Supposed to Influence Results of Treatment of Leprosy. J. G. Tolentino, Mandawe, Cebu.—p. 163.

**Treatment of Leprosy.**—Tolentino reviewed the records of 477 patients admitted to the Eversley Childs Treatment Station from 1929 to 1933 inclusive. These patients were treated almost entirely with Hydnocarpus wightiana oil or its ethyl esters either iodized or creosoted. The severity of skin lesions was found inversely proportional to the percentage of paroled patients. The duration of the disease was found to have apparently no relation to the results of treatment. The age on admission was found to have a definite relation to the results of the treatment in that the first, fourth, fifth and sixth decades gave higher percentages of paroled patients than the other decades. The results, if plotted with age, gave a curve that goes down from the first to the third as the lowest point, gradually rising to the fifth decade as the highest point, from which it goes down again. The results of the treatment were

found to be apparently better among women than among the men, except in the fifth decade, probably owing to the menopause, which disturbs the physiologic life of women. Puberty and childbirth did not seem to be important factors in the treatment among these cases. The degree of nutrition was found to have a definite relation to the results of treatment. The results are inversely proportional to the degree of obesity of the patients. It appears that excess fat in the body has an unfavorable effect on the treatment of leprosy.

### Public Health Reports, Washington, D. C.

51: 1293-1326 (Sept. 18) 1936

- Brain Reaction in Guinea-Pigs Infected with Endemic Typhus, Epidemic (European) Typhus, and Rocky Mountain Spotted Fever, Eastern and Western Types. R. D. Lillie and R. E. Dyer.—p. 1293.  
Time Changes in Relative Mortality from Accidental Burns Among Children in Different Geographic Regions of the United States, 1925-1932: Studies on Fatal Accidents of Childhood Number Three. W. M. Gafaeer.—p. 1308.

### Southwestern Medicine, Phoenix, Ariz.

20: 287-324 (Aug.) 1936

- Vaccine Therapy of Chronic Arthritis. B. L. Wyatt, H. E. Thompson and R. A. Hicks, Tucson, Ariz.—p. 287.  
Management and Surgery of Traumatic Cataract. F. C. Cordes, San Francisco.—p. 290.  
Acne Vulgaris. L. M. Smith, El Paso, Texas.—p. 293.  
Intradermal Use of Alum Precipitated Toxoid. C. W. Gerber, Las Cruces, N. M.—p. 294.  
How Can We Reduce Death Rate from Cancer? J. M. Flude, Hollywood, Calif.—p. 295.  
Treatment of Pollen and Other Inhalant Allergy. A. H. Rowe and J. B. Greaser, Oakland, Calif.—p. 297.  
Treatment of Heart Disease by the General Practitioner. R. S. Flinn, Phoenix, Ariz.—p. 302.  
Diagnosis of Early Strain of Hearts Without Valvular Lesion. O. H. Brown, Phoenix, Ariz.—p. 305.  
Treatment of Acute Diseases of Ear. R. C. Martin, San Francisco.—p. 307.

### Texas State Journal of Medicine, Fort Worth

32: 319-380 (Sept.) 1936

- \*Vaccine Treatment of Chronic Arthritis by Improved Intravenous Method. A. E. Greer, Houston.—p. 324.  
Nonspecific Granuloma of Gastro-Intestinal Tract: Report of Two Cases in Ileocecal Region. J. L. Taylor, Houston.—p. 334.  
Important Factors in Management of Urinary Infections. J. H. Shane, Dallas.—p. 337.  
Diagnosis and Conservative Management of Disturbances of Circulation in Extremities. G. Herrmann, Galveston, and L. Herrmann, Cincinnati.—p. 340.  
Short Wave Diathermy, an Adjunct in Treatment of Diseases of Eye, Ear and Nose. H. L. Hilgartner and H. L. Hilgartner Jr., Austin.—p. 346.  
Papillomatosis of Cornea and Conjunctiva. R. E. Windham, San Angelo.—p. 348.  
Cells of Bone Marrow and Blood, with New Theory of Mechanism of Hypocytic Leukosis. J. M. Hill, Dallas.—p. 352.  
Present-Day Conceptions of Malaria Therapy. W. T. Dawson, Galveston.—p. 358.  
Field Work and Drainage as It Relates to Malaria Control. E. D. Hopkins, Austin.—p. 363.  
Social Security Act as It Relates to Public Health in Texas. W. K. Sharp Jr., New Orleans.—p. 365.

**Vaccine Treatment of Chronic Arthritis.**—Greer searches for focal infections and prepares the vaccines in the usual manner. A period of vaccine treatment is first instituted before an attempt is made to deal with the focal area. In this way the grave danger of precipitating extensive lesions, which at times quickly follow the removal of infective foci, may be obviated. The first intravenous inoculation consists of 100 micro-organisms. Usually, after the inoculation the patients notice decidedly favorable responses consisting of a lessening of their joint symptoms, muscular relaxation and a sense of euphoria. This response may appear from thirty minutes to four hours after the injection and may persist for as long as forty-eight hours. If the patient's condition remains entirely stationary following the inoculation, the next dose is increased to 200 micro-organisms and continued in this manner until a favorable response is obtained. Only when the dose, which previously gave a favorable response, fails in that direction, is the quantity increased. If a reaction is elicited, the dosage is considerably reduced and a favorable response again sought for. The interval of time between inoculations is gaged entirely

by the duration and the character of the favorable responses following their administration. If these two factors are prominent, the subsequent injection is made when the patient's symptoms begin to level off into a stationary period. Ordinarily this interval is approximately forty-eight hours. There were thirty-two women and eighteen men treated. Their average age was 40.8 years. The duration of onset of the disease varied from one week to ten years. Only one joint was involved in fifteen patients, two joints in six, three joints in four, and five joints in twenty-four. Foci of infection were found in thirty-nine patients, and in only eleven of this number was it possible to eradicate completely the apparent focus by surgery. These were all afflicted with either diseased tonsils or teeth. The others were treated palliatively. The period of time during which these patients were treated varied from one month to three years; the average period was 10.5 months. Improvement was obtained in forty-four patients (88 per cent). The benefit in four of these was moderate in degree. The remainder (80 per cent) were greatly helped. Twenty-nine patients apparently recovered. Three of this number suffered a recurrence of arthritis, leaving twenty-six patients (50.4 per cent) who had no recurrences. The average period was more than eighteen months since the discharge of the latter patients and more than twenty-two months in all but seven. The remaining nineteen patients, classified as cured, were completely well after a period of twenty-four months. Therefore at least 73 per cent of the recovered patients may be estimated as having been cured, since an average time of two years had passed since they were pronounced well. Of a control group of fifty-three cases of chronic atrophic arthritis which were treated immediately preceding the institution of the intravenous vaccine treatment, 55.5 per cent showed improvement, as contrasted with the 80 per cent. This considerable difference bespeaks the greater advantage of the intravenous method in the treatment of chronic rheumatoid arthritis. Stainsby's poor results with the subcutaneous method accentuate this belief.

### West Virginia Medical Journal, Charleston

32: 441-488 (Oct.) 1936

- Breech Presentation. G. A. Ulrich, Philadelphia.—p. 441.  
Perineum During Labor. W. W. Point, Charleston.—p. 455.  
\*Electrotherapy in Endocervicitis: Report of Series of Cases. A. M. Dearman, Parkersburg.—p. 458.  
Lymphogranuloma Venereum. A. P. Hudgins, Charleston.—p. 462.  
Forty Years of Obstetrics. C. H. Maxwell, Morgantown.—p. 467.  
Caesarean Section: Summarization of 197 Cases. J. R. Bloss, Huntington.—p. 470.

**Electrotherapy in Endocervicitis.**—Dearman has used the Cherry electrocoagulation treatment on 269 cases. Only twice was it necessary to repeat the treatment for complete healing of the endocervicitis. Cauterization was used on seventy-one patients requiring a repeated treatment thirty-three times, making a total of 104 cauterizations. All coagulation treatments were given within the last two and one-half years. Seven have since become pregnant. Two have been delivered with no evidence of dystocia. One case of unrecognized pregnancy was undisturbed. Should an acute condition of the pelvis develop following cauterization or electrocoagulation, it should be treated as any acute pelvic condition, such as follow abortions or deliveries. The author's preference would be the Elliott treatment, with no rush to open the abdomen and, if abscess formed, drainage if possible by posterior vaginal section or Cullen's method. There is one variation in his later care of the patients from other reports he has studied. He instructs them to wash frequently but not to take douches. He makes no effort to remove the coagulum but dilates the canal with a small applicator with tincture of iodine. Before the first treatment he cleanses the cervix with an antiseptic and uses 15 per cent cocaine. Treatment is somewhat painful, but the pain lasts only about half a minute. Ideal results with the cautery require greater skill than with the Cherry treatment. Stenosis is due to overcauterization into muscle, and recurring endocervicitis is due to undercauterization that does not reach the diseased glandular tissues. Treatment of the cervical canal to within one-eighth inch of the internals is necessary for cure. This is more difficult when accomplished with the cautery. In the Cherry cases there were two cases of mild cervical stenosis that were relieved easily by one dilation at the office.

FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Children's Diseases, London

33: 165-250 (July-Sept.) 1936

- \*Blood Studies in Infancy: Comparison of Red Cell Counts and Hemoglobin Values of Premature Infants and Twins with Those of Full-Term Children. Alice Stewart.—p. 165.  
Epidemic Catarrhal Jaundice, with Especial Reference to Its Epidemiology. W. N. Pickles.—p. 192.  
Concurrent Diphtheria and Varicella with Hemorrhagic Features: Case. J. W. Healy.—p. 201.  
Abnormal Dick Reaction. E. W. Goodall.—p. 207.

**Blood Studies in Infancy.**—Stewart reviews the more important blood studies in infancy and reports a series of blood counts and hemoglobin estimations on full-term and premature infants. For comparison a number of figures taken from the literature are quoted. The hemoglobin percentage and red cell counts of sixty-one infants have been recorded at weekly intervals between the ages of 2 days and 27 weeks. There is a rapid reduction in the hemoglobin immediately after birth, the maximal drop occurring between the ninth and the eleventh week. The red cells also fall, but the color index remains high and is often greater than 1.0. After the third month there is a gradual rise in hemoglobin and red cells until the sixth month. Full-term children reach a higher hemoglobin level than twins or premature children (84 and 70 per cent respectively), but the average counts show little difference in the two series (3.97 and 3.92 millions respectively). The hemoglobin values in the present full-term series are higher than the corresponding ones obtained by Mackay for breast-fed children and approximate to her ideal "normal" standards. Those for the premature infants and twins are also higher than Mackay's series for infants of low birth weight but correspond closely with the observations of Josephs in premature infants. It is rare for the color index to be low before the seventh month, the average value at this age being 0.92. In older children who develop anemia the color index is usually low, the number of red cells often remaining normal in spite of the hemoglobin falling to 50 per cent.

British Medical Journal, London

2: 523-572 (Sept. 12) 1936

- Anemia in Poor Class Women, with Especial Reference to Pregnancy and Menstruation. H. W. Fullerton.—p. 523.  
Anemia and Toxemia of Pregnancy. Jocelyn Moore and E. M. Pillman-Williams.—p. 528.  
Mild Radium Therapy. F. H. Humphris.—p. 532.  
Gastrogenous Polyneuritis. A. H. Douthwaite.—p. 535.  
Blood Replacement After Hemorrhage. W. Hunter.—p. 537.

Irish Journal of Medical Science, Dublin

No. 127: 289-336 (July) 1936

- \*Transplantation of Cornea. J. W. T. Thomas.—p. 289.  
Ophthalmology in Aviation. F. S. Lavery.—p. 302.  
Spontaneous Pneumothorax. G. Bewley.—p. 309.  
Observations on Some Aspects of the School Dental Service in Cork City. R. F. Twomey.—p. 313.  
Posterior Muscle Splitting Incision for Apicolysis. E. N. MacDermott.—p. 321.  
Paraganglions in Pulmonary Plexus. D. T. Barry.—p. 323.  
Pyramidon Test for Blood. E. Harvey.—p. 326.

**Transplantation of Cornea.**—Thomas has done thirty-six consecutive operations for corneal transplantation, of which twenty-four were performed on twenty-one suitable eyes. About 80 per cent of the patients were benefited by the operation, 28 per cent were clear with vision of 6/36 or better, 70 per cent of the operations were successful, and 25 per cent resulted in clear grafts. The author quotes the results of Elschnig, Filatov and Castroviejo from which it is seen that the operation of corneal transplantation is one that should be included in the list of operative procedures which can be legitimately employed in suitable cases. The study of the operation is yet far from completed. Attention to detail is an essential requirement, and minute experimental departures from routine should be tried singly and not collectively, so that a logical inference may be drawn from the result. The outlook in the future for patients more or less blind with corneal opacities is decidedly

encouraging, and in suitable cases there is even now a 70 per cent chance of improvement and a 25 per cent chance of obtaining good useful vision. The future will hold some chance of improvement for many of the cases that are, for various reasons, classified as unfavorable.

Journal of Laryngology and Otology, London

51: 563-618 (Sept.) 1936

- Inflammatory Tumors of True Vocal Cords, Direct Laryngoscopic Observations. G. Tucker.—p. 563.  
Some Remarks on Surgical Treatment of Peritonsillar Inflammations. R. Schroeder.—p. 574.  
Vasomotor Control of Ear. P. Frazer.—p. 579.

Journal of Pathology and Bacteriology, Edinburgh

43: 233-440 (Sept.) 1936

- Bacteriophage Specific for O-Resistant V Form of Bacillus Typhosus. J. Craigie and K. F. Brandon.—p. 233.  
Identification of V and W Forms of Bacillus Typhosus and Occurrence of V Form in Cases of Typhoid Fever and in Carriers. J. Craigie and K. F. Brandon.—p. 249.  
Influence of Aeration and Diffusion on Toxin Formation by Corynebacterium Diphtheriae. C. Siebenmann.—p. 261.  
Carcinogenic Action of Radium in Rabbit: Effect of Prolonged Irradiation with Screened Radium. Joan M. Ross.—p. 267.  
Embryonal Cell Liposarcoma. A. F. B. Shaw.—p. 277.  
Disposal of Barium Sulfate in Abdominal Cavity. J. C. Thomas.—p. 285.  
Epidemiologic Aspects of Spontaneously Acquired Vaccinia in Rabbit. Louise Pearce, P. D. Rosahn and C. K. Hu.—p. 299.  
Tuberculous Verrucose Endocarditis. T. B. Davie.—p. 313.  
Primary Lesion in Phosphate Nephritis. J. B. Duguid.—p. 321.  
Pathologic Changes Due to Infection with Virus of Lymphocytic Choriomeningitis. G. M. Findlay and Ruby O. Stern.—p. 327.  
Short Marchi Technic. R. J. C. Stewart.—p. 339.  
Histologic Changes in Sex Organs of Spayed Rats Induced by Testosterone and Estrone. V. Korenchevsky and Marjorie Dennison.—p. 345.  
Nature of Pulmonary Alveolar Lining and Origin of Alveolar Phagocyte. M. E. Gazayerli.—p. 357.  
\*Complement Fixation Test in Diagnosis of Weil's Disease. A. W. Pot and C. G. J. Dornickx.—p. 367.  
Failure of Staphylococcus to Grow from Small Inocula in Routine Laboratory Mediums. R. A. Q. O'Meara and J. C. Macsween.—p. 373.  
Toxins of Staphylococcus, with Especial Reference to Estimation of Potency. F. G. Morgan and J. J. Graydon.—p. 385.  
Serologic Types Among Gravis Strains of Corynebacterium Diphtheriae and Their Distribution. D. T. Robinson and A. L. P. Peeney.—p. 403.  
Experiments in Carcinogenesis: Effect of Subcutaneous and Intraperitoneal Injection of Lard, Olive Oil and Other Fatty Materials in Rats and Mice. H. Burrows, I. Hieger and E. L. Kennaway.—p. 419.

**Complement Fixation Test in Diagnosis of Weil's Disease.**—Pot and Dornickx applied the complement fixation reaction in the diagnosis of Weil's disease. In the preparation of the antigen cultures of leptospira approximately one week old in Korthof's medium are centrifuged at 3,000 revolutions per minute or more for three or four hours. The supernatant fluid is pipetted off and the deposit is resuspended in 0.3 per cent phenol-saline solution. The quantity must be 1:10 of the original quantity of the fluid medium. The antigen is a turbid fluid, which shows only remains of leptospira after it has been in the ice chest for a few days. For the titration of the antigen a series of antigen dilutions in phenol-saline solution is mixed with a hundredfold dilution of an inactivated highly positive serum and a tenfold dilution of fresh guinea-pig serum (complement), 0.3 cc. of each. After thorough shaking the tubes are incubated at 37 C. for one hour. After this, 0.6 cc. of the hemolytic system is added. The rack is incubated for thirty minutes, after which the reading is taken. If the antigen has been sufficiently active, hemolysis is completely inhibited in the first tubes, which contain the largest quantities of antigen. In the remaining tubes the inhibition is incomplete or absent. The last tube with complete inhibition indicates the titer. In the test proper, in accordance with Gaetgens, the authors carry out the test quantitatively; i. e., they determine the dilution of a positive serum which just gives complete inhibition. The reaction is not more intricate in its execution than the Wassermann test. There were 100 serums sent in for examination for Weil's disease in which the results of the agglutination and lysis tests could be compared with those of complement fixation. There were seventy-three serums in which both reactions were negative, nineteen in which both reactions were positive, one in which both reactions were doubtful and seven serums in which the complement fixation test was negative and agglutination and lysis tests were slightly positive.

## Journal of State Medicine, London

44: 435-496 (Aug.) 1936

- Rôle of the General Practitioner in Obstetric Practice. J. Young.—p. 435.  
 Id. J. Dunlop.—p. 440.  
 Id.: From the Public Health Point of View. J. A. Stephen.—p. 446.  
 The Place of the Medical Officer of Health in Administration of the Municipal Hospital. E. K. Macdonald.—p. 455.  
 Investigation of Anemias of Pregnancy and Puerperium. Moira Stevenson.—p. 467.  
 Laboratory Aspect of Anemias of Pregnancy. W. F. Harvey.—p. 478.

## Lancet, London

2: 549-608 (Sept. 5) 1936

- Treatment of Angina Pectoris. B. Parsons-Smith.—p. 549.  
 Choice of Patients, with Angina of Effort, for Thyroidectomy. G. Bourne.—p. 551.  
 Carcinogenesis as Means of Reducing Cancer Mortality. S. Peller.—p. 552.  
 \*Impaired Glucose Tolerance in Certain Alimentary Disorders of Childhood, with Remarks on Their Treatment with Liver Extract. C. W. Ross.—p. 556.  
 \*Intravenous or Intraperitoneal Antitoxin Treatment, Combined with Short Isolation Period, in Scarlet Fever. H. S. Banks.—p. 559.

**Impaired Dextrose Tolerance in Alimentary Disorders of Childhood.**—Ross has found the dextrose tolerance curves to be high in the fifteen cases so far examined, even though some of these did not show gross flattening of the oral curve. In ten cases of chronic intestinal indigestion investigated, he has found a normal fecal fat output associated with a flat oral dextrose tolerance curve and a high intravenous one. He has investigated three cases of abdominal tuberculosis which have shown flat oral and high intravenous curves. The administration of liquid liver extract (half an ounce [15 cc.] twice daily), either enterally or parenterally, has been shown to improve the dextrose tolerance when it is impaired in these conditions.

**Intravenous or Intraperitoneal Antitoxin Treatment.**—This study deals with a series of 1,877 cases treated with intravenous serum and controlled with a nonserum treated series of 1,419 cases, mostly in separate wards, during the years 1933 and 1934. Banks found that a single dose of from 10 to 20 cc. of scarlatinal antitoxin injected intravenously or intraperitoneally within the first three days of onset considerably modifies the course of both simple and septic scarlet fever. By this means the average hospital isolation period has been reduced successfully to about two weeks for adults and three weeks or less for children. The application of this routine in all definite cases of scarlet fever admitted to hospital wards in the acute stage has been associated with a substantial and significant reduction of morbidity. Thus, otitis media has been reduced to one third and nephritis to less than one seventh of the incidence in untreated controls. The intraperitoneal route of injection of antitoxin in this disease has yielded results almost identical with those of the intravenous. Since the technic of intraperitoneal injection at all ages is simple, and danger from shock is negligible, with adequate aseptic safeguards the method is susceptible of wide practical application.

2: 665-722 (Sept. 19) 1936

- Some Problems in Antenatal Supervision. G. I. Strachan.—p. 665.  
 Experimental Observations on Rationale of Radiotherapy. W. Cramer.—p. 668.  
 \*Method of Spacing Radiation in Treatment of Tumors. J. C. Mottram and J. Morton.—p. 672.  
 Increasing Effectiveness of Testosterone. A. S. Parkes.—p. 674.  
 Vascular Tumor Seated in Extensor Hallucis Brevis Muscle. F. Forty.—p. 676.  
 Mental Sequels of Chronic Epidemic Encephalitis and Their Prognosis. H. A. Cooper.—p. 677.  
 \*Tropical Macrocytic Anemia. L. E. Napier.—p. 679.

**Method of Spacing Irradiation in Treatment of Tumors.**—Mottram and Morton state that the method of spacing irradiations is based on two facts. The first is that cells under anaerobiosis are more resistant to irradiation than well oxygenated cells. The second is that radiation, through action on capillaries and small blood vessels, interferes with the circulation of the tissue or tumors irradiated, so much so that when an animal bearing two tumors, one irradiated and that when an animal bearing two tumors, one irradiated and one nonirradiated, is inoculated with India ink a few days after the application of radiation, it is found that the ink enters the normal tumor but fails to gain entrance into the irradiated tumor. It follows that, during the interference with the circu-

lation following irradiation, tumors must be radioresistant and that they will not again become radiosensitive until this damage to the blood vessels has been recovered from. Thence the system of spacing irradiation which took account of these factors might in certain cases prove both practicable and justifiable in the treatment of patients suffering from malignant disease. Treatment is administered either continuously or at short intervals until the tumor shows an initial decrease in size; it is then discontinued until the measurements show an increase, when the process is repeated. Side by side with the treatment of patients, a set of tar warts in mice has been treated by spaced gamma irradiation. These likewise showed regression following treatment within a day or two and without any latent period. More especially is this the case once the growth of the tumor has been controlled, when small doses of radiation suffice to produce much regression. On the whole it appears that these diminutions in size are not due to destruction and disappearance of tumor cells but rather to fluctuations in the blood supply to the tumors, which form waves on the slower regression, owing to disappearance of tumor cells. By applying treatment only during periods of growth and withholding it during periods of regression, tar warts have been cured in mice and tumors in man have been benefited with no more than trivial damage to the surrounding normal tissues, such as transient erythema or partial epilation.

**Tropical Macrocytic Anemia.**—Among the cases of anemia admitted to the Hospital for Tropical Diseases in Calcutta during the last year, Napier observed eleven cases of macrocytic anemia that responded to treatment with an autolyzed yeast preparation; four of these patients were nonpregnant women and seven were men. The hematologic observations in these cases are similar to the changes in Wills' tropical macrocytic anemia, except that the indirect van den Bergh reaction was positive in nine, and there was other evidence of increased blood destruction. It seems that, in addition to the vitamin B complex deficiency, there must be other causes of this condition. It is suggested that excess hemolysis of red blood cells may be an associated factor in this macrocytic anemia.

## Medical Journal of Australia, Sydney

2: 203-250 (Aug. 15) 1936

- Statistical Tabulation of Results of Treatment of Carcinoma of Tongue. M. J. Holmes.—p. 203.  
 Treatment of Carcinoma of Tongue. H. Searby.—p. 210.  
 Carcinoma of Tongue. I. B. Jose.—p. 217.  
 \*Some Observations in Radium Treatment of Cancer of Tongue. V. McDowall.—p. 218.  
 \*Rodent Ulcer: Its Development on Limbs. H. Newland.—p. 221.  
 Primary Carcinoma Unsuspected by the Clinician. A. J. Trinca and R. A. Willis.—p. 222.  
 Deep X-Ray Therapy in Treatment of Cancer of Tongue. W. R. Frayne.—p. 227.  
 Radiologic Treatment of Cancer of Tongue. L. J. Clendinnen.—p. 228.

**Radium Treatment of Cancer of Tongue.**—McDowall has been treating cancer of the tongue since 1928 with the interstitial application of radium. Although his figures are small, he finds on comparing them with those of other workers who have larger numbers to deal with that there is not a great deal of difference in the average results. Of his patients treated in 1929, approximately 33 per cent are now alive and apparently cured. The greater number of the 33 per cent of cured patients come from what he considers to be the favorable group, that is, those with no palpable glandular involvement at the beginning of treatment. Of the patients in whom there were palpable glands at the time of treatment, only two now survive, and he is of the opinion that the result in these two cases was due more to other causes than to the method of treatment. In most of the patients with glandular involvement who received radiation treatment there was some improvement. This amounted in a few instances to a temporary disappearance of the glands and in others to a shrinkage or regression of the glands. In the majority even of the unfavorable cases there has been at first considerable diminution of pain. Subsequent treatments to the glandular growths were never so effective as the first. In the majority of cases in which there was secondary glandular involvement the period of survival ranged from a few weeks to eighteen months, although the average survival time was from seven to eight months.

**Rodent Ulcer.**—In more than 600 private cases of rodent ulcer, Newland has found five examples of rodent ulcer of the upper extremity. The growths had been present for from ten to thirteen years. The situation of the growth on the limb was on the back of the wrist, the antero-external aspect of the elbow, and the middle of the radial border of the forearm in the men, and the front of the elbow and the middle of the flexor aspect of the forearm in the women. Associated with the rodent ulcers were other growths in every instance but one. All the growths were situated on regions of the upper extremity subject to exposure to the weather, and the skin of all the patients showed evidence of this. Two of the men cited injuries to explain the development of the growth. The author treats early rodent ulcers in the following way unless the growth has attacked the bone, cartilage or conjunctiva: A local anesthetic of procaine hydrochloride is injected around the growth. When the part is anesthetized, the growth is curetted with a stainless steel curet. A rodent ulcer yields to a curet just like granulation tissue, and a smooth surface is left. After a thorough curetting, only a thin layer of the rodent ulcer cells is likely to remain. These are still further reduced by searing the raw surface with an electric cautery. This has the advantage of leaving a dry surface as well as destroying cancer cells. One or two radium 10 mg. plaques are now applied without a filter to the curetted surface and to the edges for an hour. The process is repeated, a thin filter being used. Except in the case of insignificant growths, an erythema dose of x-rays is given as well. With this treatment very few recurrences have occurred and the cosmetic results have been excellent.

### Practitioner, London

137: 257-392 (Sept.) 1936

- Industrial Medicine. J. Simon.—p. 257.  
Prevention of Disease in Industry. J. C. Bridge.—p. 260.  
Physical Standards in Industrial Health. D. Munro.—p. 270.  
Industrial Absenteeism. N. H. Mummery.—p. 280.  
Industrial Poisons. D. Hunter.—p. 290.  
\*Industrial Diseases of Lungs, with Especial Reference to Silicosis. W. E. Cooke.—p. 314.  
Psychologic Disorders in Industry. M. Culpin.—p. 324.  
Some Practical Aspects of Industrial Hygiene. D. Stewart.—p. 334.  
Prevention and Cure of Occupational Dermatitis. P. B. Mumford.—p. 343.  
Hypnotic Drugs. L. I. M. Castleden.—p. 358.  
General Practice: No. III. Legal Aspect of Partnership and Assistantship. O. A. Hempton.—p. 369.

**Industrial Diseases of Lungs.**—Cooke in his discussion of the industrial diseases of the lungs states that of all the dusts generated during mining, quarrying and manufacturing processes only two (silica and asbestos) have been proved to be biologically active and to cause extensive disease in workers. To produce silicosis there must be an admixture of silica. The incidence of the disease is extremely small and falls solely on those engaged in drilling and handling sandstone. About 60 per cent of the dust particles are trapped by the physiologic defense of the respiratory tract before reaching the larynx. The protective mechanism is very efficient unless constantly overwhelmed over a long period by the presence of particles of dust in the air less than 10 microns in length. Workers exposed for years to atmospheres containing not more than from 10 to 20 million particles per cubic foot escape, whereas in those breathing higher concentrations silicosis eventually develops. The length of time required for silicosis and asbestosis to develop and death to ensue may be gathered from the report of the chief medical inspector of factories, in which the average duration of employment varied from 6.4 to 39.2 years. To produce a reaction either in subcutaneous tissue or in the lungs a dust must be soluble. Silica is soluble to the extent of 1 in 10,000 parts of distilled water, and the solubility is increased by the presence of alkalis, and increased too as the size of the particle diminishes. At least 75 per cent of patients with silicosis contract tuberculosis. The silicotic lung is susceptible to infection and this susceptibility increases with the amount of damage produced by silica. Other infections are not uncommon. Influenza, bronchitis and pneumonia account for 6 per cent of the deaths of those certified as silicosis in South Africa. The earliest roentgen manifestation is an increase in the density of the shadows of the vascular tree. The earliest indications are in the middle and lower zones of the lung. Increase in the root shadow due to involvement of the glands is constant.

### South African Medical Journal, Cape Town

10: 523-564 (Aug. 8) 1936

- The Crime of Abortion. C. C. Jarvis.—p. 525.  
Abortion: Its Ethical, Legal and Medical Aspects. S. M. de Kock.—p. 526.  
Artificial Abortion. I. P. Schabort.—p. 534.  
The Medicolegal Aspect of Abortion. W. F. Rhodes.—p. 539.  
The Rural Hospital as an Agent in Native Health Education. G. W. Gale.—p. 541.  
Salmonella Suipestifer var. Afri. Aust. in an Outbreak of Food Poisoning in Cape Peninsula. E. C. Greenfield and M. H. Judd.—p. 544.  
Meningococcal Suppurative Arthritis of Cryptogenic Origin. W. Campbell and E. C. Greenfield.—p. 545.

### Quart. Bull., Health Org., League of Nations, Geneva

5: 211-390 (June) 1936

- Biothermic Method of Fly Destruction and Ease with Which It Can Be Adapted to Rural Conditions. E. Roubaud.—p. 214.  
Investigations into Fly Density in Hungary in Years 1934 and 1935. F. Lörincz and G. Makara.—p. 219.  
Flies Visiting Human Feces in Hungary. F. Lörincz, G. Szappanos and G. Makara.—p. 228.  
Cause and Prevention of Acute Rheumatism in Childhood. B. Schlesinger.—p. 239.  
Incidence and Importance in the United States of America of Rheumatic Disease in Children. R. Pemberton.—p. 247.  
Role of Clinical Medicine in Prevention of Rheumatic Invalidity. M. P. Weil.—p. 252.  
Rheumatism and Occupation in the Union of Soviet Socialist Republics. Danischewsky.—p. 255.  
Prevention of Permanent Disability and Measures to Be Taken in Case of Invalids, Especially Those Suffering from Sequels of Rheumatism. G. Kahlmeter.—p. 269.  
Prevention and Cure of Rheumatism: International Action. J. van Breemen.—p. 277.  
Occurrence in Fresh and Brackish Water of Larvae of "A. Maculipennis Atroparvus" and "Mesosea" in Some Coastal Provinces of the Netherlands. N. H. Swellengrebel, A. de Buck, M. H. Kraan and G. van der Torren.—p. 280.  
Investigations on Transmission of Malaria in Some Villages North of Amsterdam. N. H. Swellengrebel, A. de Buck, E. Schoute and M. H. Kraan.—p. 295.  
Trachoma and Antitrachoma Work in Turkey. H. Kural and N. Ayberk.—p. 353.  
\*Interrelation of Antigenic Properties of Snake Venoms and Its Bearing on Polyvalence and the Assay of Serums. E. Grasset.—p. 367.

**Antigenic Properties of Snake Venoms.**—Grasset believes that the standardization of venom antibodies generally, and in this particular instance of the viperidae and colubridae antibodies of polyvalent serum should be effected by a preliminary comparison with a specific standard serum for each of the two groups. Such serums, the neutralizing potency of which is exactly determined, would, after being dried, enable a defined specific antivenom unit to be adopted. By determining test doses of the corresponding venoms in relation to the antivenom unit adopted for these specific serums and carrying out subsidiary assays of the polyvalent serum in relation to these test doses, it will be possible to measure the antibody content of this serum in terms of anticobra and anti-Bitis units. The assay of antivenom serums in relation to standard serums would have theoretical and practical advantages over a method of direct neutralization tests against increasing quantities of venom (mg.) or methods involving the use of numerous lethal doses of venom, for the toxicity of the latter is liable to vary greatly under the influence of individual and seasonal factors, the effects of life in captivity and diet. The international standardization of antivenom serums on a principle similar to that adopted for the standardization of bacterial antitoxins would have the advantage of providing a satisfactory standard of reference for the assessment of the specific, relative and therapeutic neutralizing potency of antivenom serums, at all events within such limits as the specificity of venom antigens allows.

### Chinese Medical Journal, Peiping

50: 761-884 (June) 1936

- Urinary Stone Formation, Clinical and Experimental. J. Gray.—p. 761.  
Influence of Diet on Formation of Urinary Calculi. H. C. Hou.—p. 787.  
Composition of Vesical Calculi. T. K. Lien.—p. 797.  
Extravasation of Urine: Study of Thirty Cases. G. Y. Char, H. E. Shih and C. P. Yang.—p. 807.  
Congenital Solitary Kidney. H. E. Shih and G. Y. Char.—p. 821.  
Geographical Distribution of Vesical Calculus in China. J. L. Maxwell.—p. 827.  
Bladder Stone in Manchuria. C. Chang and C. E. Wang.—p. 829.  
Contribution to the Cystic Lithiasis Disease. O. Hueck.—p. 833.

## Bulletin Médical, Paris

50: 605-618 (Sept. 12) 1936

\*Barium Enema Controlled by Roentgen Rays: First Use in Diagnosis of Localization and Treatment of Acute Intestinal Invagination of Nursling. D. Ferey.—p. 607.

**Barium Sulfate Enema in Treatment of Intestinal Invagination.**—Ferey discusses the use of the barium sulfate enema in the localization and treatment of acute intestinal invagination in nurslings. The barium is retained simply by pinching the infant's anus between the thumbs. Its use for this purpose should be employed only in the presence of a surgeon, near a fully prepared operating room, and should be administered to the infant without any anesthesia. The barium must be allowed to flow in extremely slowly, since the intestine is fragile and edematous and may be easily torn. When given under the fluoroscope, it is easily possible to know at what point the barium ceases to ascend the intestine. In many instances the column of barium will, after a short delay, fill the loop of intestine that is the site of the invagination and thus make operative intervention unnecessary. It is advisable to give the enema as early as possible, although it is occasionally justifiable to use this method after an invagination has existed from twenty-four to thirty-six hours. Finally, the author believes that in those cases in which the diagnosis of invagination is doubtful because the symptoms are not all present, the barium enema may establish the diagnosis during the first few hours of its existence and before the appearance of the bloody stools. Even when this method fails as treatment, it will permit operating on the nursling while it is still in good condition.

## Paris Médical

2: 177-204 (Sept. 19) 1936

Psychiatry in 1936: Clinical Review. N. Péron.—p. 177.

Primary Constitutional Anxiety States. J. Lévy-Valensi.—p. 185.

Puerperal Psychoses and Their Treatment. P. Guiraud and C. Nodet.—p. 194.

\*Severe Late Syndrome of Penetrating Wounds of Skull in the Injured of the 1914 to 1918 War. R. Targowla.—p. 200.

## Late Syndrome of Penetrating Wounds of Skull.—

According to Targowla, the most important late symptoms resulting from penetrating wounds of the skull sustained in the war of 1914 to 1918 consist in the triad of hemiplegia, epilepsy and changes of mental state. The changes in mental state constitute the worst of these late symptoms from the standpoint of the individual, the family and society in general. The severe headaches, dimness of vision, intolerance to noise and other sensory phenomena, and the vertigo are important elements in the development of abnormal mental states of this nature. Extreme irritability, excessive emotion, feelings of inferiority and intellectual deterioration are the important end results.

## Presse Médicale, Paris

44: 1433-1448 (Sept. 12) 1936

\*Calcium Content of Cardiovascular System in Experimental Hyperparathyroidism. R. Leriche, A. Jung and S.-M. Dupertuis.—p. 1433.  
Registration of Electrical Activity of Brain. A. Denier.—p. 1436.

**Experimental Hyperparathyroidism.**—Leriche and his colleagues report the result of a chemical and histologic study of the heart and blood vessels in experimental hyperparathyroidism. They gave injections of parathyroid extract to twenty-five young rats and fourteen rabbits. The extract used was that of Collip or Byla. Injections were made subcutaneously and varied in amounts of from 2 to 20 units daily. They were continued from two days to four and one-half months. The animals were fed a diet without restriction. Injection of Collip's parathyroid extract in young animals caused a considerable retardation and arrest in growth and killed a fairly large proportion of young rats. The adolescent rats withstood it better. The Byla extract caused much less arrest in growth and allowed longer survival periods. The entire heart of each was studied after removal of the blood. The vessels studied were the thoracic and the abdominal aorta and the femoral arteries. The animals were killed the day after their last injection. These studies showed that the quantity of calcium in the heart

doubles after six daily injections of Byla's parathyroid extract. The calcium content of the heart reaches four times its normal value after four daily injections of Collip's parathyroid extract in the young rats. The same doses have no appreciable effect on the adolescent rabbits. The effect on the heart appears to result from the four first injections. If injections are continued for a longer period, the calcium content of the heart returns to practically normal. The calcium content of the aorta of the young rat reaches from two to four times its normal value after prolonged injections of extract, while in the adolescent rabbit from four to fifteen doses rarely caused a doubling of calcium values. It may be concluded from these observations that experimental hyperparathyroidism produces an increased calcium content of the heart and arteries which can be demonstrated both chemically and histologically. The quantity, the quality and the duration of the injection all affect the degree of hypercalcemia. The animal used and its age also appear to influence the course taken. Apparently, however, even after prolonged injections, the calcium deposit remains raised in the arteries, although it may have returned to normal in the myocardium.

## Helvetica Medica Acta, Basel

3: 507-624 (Sept.) 1936

Vicious Circle of Colon and Secondary Megacolon of Isolated Loop in Transversosigmoidostomy. C. Henschen.—p. 507.

\*Treatment of Edema. W. Löffler.—p. 525.

So-Called Lymphatic Reactions: Contribution to Glandular Fever. A. Studer.—p. 560.

The Changing Picture of Diabetes Mellitus. A. Schüpbach.—p. 573.

\*Rôle of Gastro-Intestinal Tract in Hematopoiesis and in Anemia. O. Naegeli.—p. 581.

**Treatment of Edema.**—Löffler states that treatment of edema is no more than treatment of a symptom. Its removal, however, serves not infrequently to break the vicious circle by relieving the load on a diseased heart or by enabling the tissue fluids to return to the general circulation. Cardiac therapy is frequently identical with the therapy of edema. The treatment of the latter, however, is as a rule an indirect treatment only of the cardiac condition. Treatment of the heart assumes a primary importance in the treatment of cardiac edema. It is of no value in edema of nephritic or thyrogenous origin. Mercurial diuretics are indicated in cases in which edema is the prominent symptom. They are likewise indicated in cachectic edema. They are not to be used in the presence of renal insufficiency. While urea derivatives are the diuretics of choice in nephroses, mercurial diuretics may be employed as well and deserve consideration as such. Treatment along etiologic lines is indicated in cases of nephroses in which syphilis, tuberculosis or other chronic infection is a factor. Despite the advances in the treatment of acute nephritis, the appearance of edema cannot always be prevented. The effect of hunger and thirst therapy of acute nephritis is directed not so much against the edema as to insure the sparing of renal and adrenal functions. There exists no need for more diuretics. It is important to remember that rest in bed and limitation of fluid intake are imperative in the treatment of every form of edema.

**The Gastro-Intestinal Tract and Hematopoiesis.**—The part played by the gastro-intestinal tract in hematopoiesis is strikingly demonstrated in the case of pernicious anemia. The relationship, however, is far more complicated than was at first believed. It can be definitely stated that insufficient absorption of iron can lead to iron deficiency and that deficient absorption of still other substances may likewise produce anemia. The anemia of deficiency diseases is easily understood, since all the substances necessary for the building processes are, with the exception of oxygen, introduced into the organism by way of the stomach. Differentiation of various types of anemias has an important clinical and therapeutic significance. Naegeli wishes to emphasize that the gastric and liver substance is effective in pernicious anemia only. In contradistinction to the earlier view, this substance represents an antipernicious rather than an antianemic principle. The author has never observed in his clinical material a definite effect from liver or gastric substance feeding or a reticulocyte crisis in any of the anemias save that of the pernicious anemia.

# Policlinico, Rome

43: 477-532 (Oct. 1) 1936. Medical Section

- \*Prostatic Test. D. Longo.—p. 477.
- Function of Liver in Undulant Fever with Hepatomegaly. L. Alestra.—p. 484.
- Autofecal Vaccines in Treatment of Bacterial Chronic Colitis and Intestinal Amebiasis in Anamebic Phase. L. Pontoni.—p. 502.
- Chemistry of Cerebrospinal Fluid in Tetanus. R. Liberti.—p. 523.

**Prostatic Test.**—Longo states that gentle massage of the prostate (three or five minutes in a patient with a fasting stomach) results in producing leukocytosis if there is chronic or subacute inflammation of the structure. The test is positive (production of leukocytosis) in prostatic inflammation whether or not associated with pathologic conditions of the tonsils and also in the latter conditions, whether or not associated with the former. The test is contraindicated in acute prostatitis. It is of value in the diagnosis of prostatic inflammation and it shows a possible relationship between disease of the prostate and of the tonsils.

# Rivista Italiana di Ginecologia, Bologna

19: 311-414 (Aug.) 1936. Partial Index

- \*Rapid Test (Chediak) for Diagnosis of Syphilis in Obstetric Cases. R. Pignoli.—p. 311.
- Reactive New Growth Due to Anatomic and Functional Faults of Human Placenta. F. D'Erchia.—p. 335.
- Neuromotor Activity of Uterine Segments: Experiments. G. Paroli.—p. 344.
- Rapid Evolution of Adenoma of Breast in Pregnancy: Case. M. Titone.—p. 368.
- Action of Pregnant Hormones on Human Ovary and Menstruation. M. Trettenero.—p. 380.

**Dry Blood Test in Diagnosis of Syphilis.**—Dahr's modified technic of the Chediak test for the serodiagnosis of syphilis was reported in the *Münchener medizinische Wochenschrift* 81:1723 (Nov. 8) 1934 (abstr. *THE JOURNAL*, Jan. 12, 1935, p. 166). The test is made with one drop of dry blood. Pignoli used it in 250 cases of syphilis and in 125 nonsyphilitic cases. The Chediak modified test has the same sensitivity of the Wassermann and Meinicke second clarification tests in primary and secondary syphilis and in neurosyphilis. It is much more sensitive than the Wassermann and Meinicke tests in tertiary syphilis, in congenital syphilis and especially in latent syphilis. The test does not give specific results in pregnancy, in the puerperium or in the blood of new-born infants. The author emphasizes the advantages of the test, especially its rapidity, simplicity, low cost and reliability. He advises systematic performance of the test for diagnosis of latent syphilis in women in maternity hospitals, new-born infants in asylums, patients in ambulatory clinics and, in emergencies, for blood transfusion. The test is one of orientation, the results of which are to be verified by those of other serologic tests.

# Prensa Médica Argentina, Buenos Aires

23: 2249-2304 (Sept. 30) 1936. Partial Index

- Bed for Patients Suffering from Fractures. E. Finochietto.—p. 2249.
- Pulmonary Lobectomy in Treatment of Hemoptoic Bronchiectasis: Case. A. Ceballos.—p. 2268.
- Block of Branch of Bundle of His with Paroxysms of Slow Pulse and Epileptiform Condition: Case. A. Camarero and J. Sacón.—p. 2275.
- \*Syndrome of Acute Appendicitis as only Symptom of Calculous Chronic Cholecystitis. Teresa Malamud.—p. 2277.
- Technic for Upper Thoracoplasty. V. J. Bértola and L. F. Videla.—p. 2282.
- Intercurrent Eclampsia: Expectant Treatment; Results in One Case. J. Dixon.—p. 2291.

**Calculous Chronic Cholecystitis.**—Malamud states that chronic pain of the right iliac fossa is a frequent symptom of calculous chronic cholecystitis. The pain may be accompanied by hepatic colic pain. It is intensified and gives a picture of acute appendicitis during aggravation of cholecystitis. In cases of this nature it is advisable to make clinical, chemical, biologic and roentgen examinations in order to find out the condition of the gallbladder before resorting to appendectomy. If the condition of the patient is grave, it is advisable to perform an appendectomy, making the incision large enough to be able to examine the gallbladder systematically. The appearance of a macroscopically normal appendix and of a pathologic condition of the gallbladder, especially acute cholecystitis and calculi, indicates cholecystectomy immediately after appendectomy. Two cases of calculous acute cholecystitis with a syndrome of acute appendicitis are reported.

# Semana Médica, Buenos Aires

43: 893-960 (Oct. 1) 1936. Partial Index

- Meningeal Forms of Acute Anterior Poliomyelitis: Cases. R. Cibils Aguirre.—p. 893.
- Treatment of Placenta Praevia. J. A. Beruti and J. L. Ahumada.—p. 913.
- Stectomy: Technic of Lateral Route at Neck. A. R. Albanese and N. B. Turco.—p. 919.
- Scurvy in Children: Diagnosis. C. P. Montagna.—p. 924.
- \*Diagnosis and Indications of Operation in Acute Mastoiditis. A. M. Cavazzutti.—p. 928.

**Acute Mastoiditis.**—Cavazzutti states that, from the first days of acute suppurative otitis media, a mastoid reaction takes place. According to local and general factors, the mastoid reaction may regress within a week or become more intensified as mastoiditis complicates otitis. In the latter case mastoiditis completely develops in twenty-one days. The diagnosis of mastoiditis is made by the persistence and intensification of the symptoms of the mastoid reaction after the first week; external inflammation in the mastoid region (differentiated from the early mastoid reaction by the time of appearance of the inflammation in relation to the duration of the disease), persistence of deep arterial pulsation (which indicates the persistence of empyema), persistence of neuralgic pain irradiated to the corresponding trigeminal territory, lowering of the posterior superior wall of the external auditory canal and destruction of the mastoid bone, verified by roentgen examination of the bone. Fever, especially if high, beyond the first week is an unfavorable symptom which, alone or with other symptoms, may indicate an operation. Operation must be performed in all cases of acute mastoiditis in which the diagnosis is confirmed, but especially in mastoiditis complicated by subcutaneous abscess of the mastoid region and otitis of three weeks' duration with inflammation of the surface of the apophysis, or without apophyseal inflammation, but with subjective and objective symptoms of an unfavorable evolution and no tendency to a regression of the disease. Grave complications, whether or not fully developed, indicate immediate operation, regardless of the duration of the disease. Systematic performance of an operation during the first week of otitis to prevent the development of mastoiditis is inadvisable. Indications for operation during the first and second weeks depend on the evolution of the disease and the development of grave complications. All cases of otitis the evolution of which is not favorably modified by the fourth week are indications for an immediate operation, regardless of the absence of alarming symptoms. In cases in which the diagnosis is already confirmed but in which there are doubts as to the advisability of operating, the decision is based on the following principle: Operation for mastoiditis which could evolve satisfactorily without surgical intervention is better than losing patients who might have been saved by it.

# Archiv für Kinderheilkunde, Stuttgart

108: 193-256 (Aug. 4) 1936

- Fate of Nurslings with Tetany Who Were Treated at the Children's Clinic in Würzburg from 1918 to 1925. G. Hekert.—p. 193.
- Spontaneous Remission in Congenital Hypothyroidism. J. Siegl.—p. 199.
- Significance of Congenital Predisposition and of Acquired Pneumonias for Development of Bronchiectasis in Children. Gesine Edel.—p. 204.
- \*Epiphyseolysis in Distant End of Humerus as Birth Injury. O. Chiari.—p. 213.
- Practical Evaluation of Ninni's Experimental Tuberculosis with Contribution to Question of Incidence of Open Pulmonary Tuberculosis in Children with Positive Tuberculin Tests. A. Netrasiri.—p. 217.
- \*Diagnosis and Differential Diagnosis of Pulmonary Abscess in Older Children. S. Müller.—p. 224.

**Epiphyseolysis as Birth Injury.**—Chiari reports the histories of two cases of birth injury in the region of the elbow; namely, an epiphyseolysis at the lower end of the humerus. In the first case the origin of the epiphyseolysis was obscure, for there was no record of a severe trauma during birth nor were there indications of a congenital inferiority of the skeleton. In the second case, which lies thirteen years back, the origin is more clear, since there was a transverse position, and the delivery was terminated by version and extraction.

**Pulmonary Abscess in Older Children.**—According to Müller, pulmonary abscesses are not as rare in older children as is generally believed. In adults as well as in children there

are considerable diagnostic difficulties in the differentiation from interlobar empyema, sacculated empyema and tuberculous cavities. The author first describes the clinical histories of two boys, aged 10, who were subject to bronchial asthma and who, following a pneumonic process, developed a pulmonary abscess which was cured in both cases following the surgical opening of the abscess. In these cases the physical as well as the roentgenologic examination revealed the pulmonary abscess. Then follows the history of a boy, aged 16, who had a severe diabetes and who developed a pulmonary abscess. The observations in this case suggested a tuberculous disorder, but the necropsy revealed a pulmonary abscess. The differentiation was difficult in this case. Tuberculosis as a rule does not present an isolated focus of decomposition in an otherwise intact lung, but tuberculous foci must be expected in other parts of the lung; and this was the case in this diabetic patient. In addition to a shadow in the right upper lobe, there was a focus in the left lower lobe. The necropsy revealed, however, that this focus was a bronchopneumonic one. The author further reports a case of spontaneously cured sacculated hydropneumothorax in a boy aged 7. He thinks that the hydropneumothorax, which was accompanied by bronchopneumonia and bronchiectasis, resulted from the bursting of an emphysema vesicle. In discussing the differential diagnosis of this case, he says that the boy presented at first the signs of pneumonia, and this diagnosis was roentgenologically corroborated. However, after the pneumonia had run its course, roentgenoscopy revealed in the left side of the thorax a fluid level and above it an air vesicle. The patient felt comparatively well and had no sputum, and thus an intrapulmonary process could be excluded. Finally, the author reports two cases of interlobar empyema (in a boy aged 8 and in an adult aged 43). Both these cases healed spontaneously following perforation of the empyema into the bronchus. In the case of the adult a tuberculous process could be excluded, in view of the rapid development and prompt disappearance of the process and the lack of scar formation. However, it was at first difficult to decide whether the process was an interlobar empyema or a pulmonary abscess in juxtaposition to the interlobar cleft. Several roentgen exposures and other aspects of the case finally disclosed it to be a parapneumonic and metapneumonic empyema in the middle interlobar cleft.

### Archiv für klinische Chirurgie, Berlin

185: 587-771 (Aug. 11) 1936. Partial Index

- \*Thyroid Activity and Fracture Healing. H. Eitel and E.-W. Lexer.—p. 587.
- Late Results in Two Cases of Extensive Resection of Small Intestine. W. Noetzel.—p. 599.
- Spontaneous Hypoglycemia: Case. M. Munakata.—p. 624.
- Surgical Treatment of Congenital Webbed Skin. T. Matolesy.—p. 675.
- Perforating Ulcer of Foot and Sympathetic Nervous System. V. Sanchis-Perpiñá.—p. 682.
- \*Causes of Death in High Intestinal Obstruction in Experimental Animal. J. Bottin.—p. 705.

**Thyroid Activity and Fracture Healing.**—According to Eitel and Lexer, clinical observations have established the favorable effect of thyroid substance on the healing of fractures. It was believed that this effect was brought about by an increase in the hyperemia about the fractured ends and that this hyperemia was caused by the activity of the thyroid secretion. To test the correctness of this assumption the authors experimented with hyperthyroidized animals in which they produced subcutaneous fractures. They found that the hyperemia took place earlier and lasted longer in animals treated with thyrotropic hormone. They also found that thyroxine acted in a similar manner. The effect produced by both substances is based on their ability to raise the metabolism. They likewise had undoubted clinical demonstration of the stimulating effect of the thyrotropic hormone on delayed union of fractures.

**Death in High Intestinal Obstruction.**—Bottin concludes, on the basis of numerous animal experiments, that death in experimental high intestinal obstruction is caused by two main factors: intoxication and water and salt deprivation. Infusions of large amounts of physiologic solution of sodium chloride delay death in animals with a high intestinal obstruction by seven and, at times, fifteen and even twenty-one days. Only the resection of the duodenal portion of the pancreas is capable

of prolonging the life of the experimental animal up to the thirtieth day. The author has utilized the method of exchange of blood between an animal with experimental high intestinal obstruction and a normal animal since 1931. Exchange of blood between a dog first deprived of water and salt for sixteen hours and a dog severely damaged by intestinal obstruction led in the former to total anuria and death without other organic changes. An animal not deprived of water and salt tolerated the blood exchange a longer time. If the animal with high intestinal obstruction was first given a copious infusion of physiologic solution of sodium chloride, the recipient, though prepared with deprivation of water and salt, suffered little from blood exchange, provided the donor has not been rendered too toxic by the obstruction. After seventeen days of obstruction, the blood exchange was fatal to the recipient unless he was treated on the interruption of blood transfusion with copious transfusion of physiologic solution of sodium chloride. Two animals deprived of water and salt suffered no damage when subjected to exchange of blood. A healthy dog, and even one deprived of water and salt, will tolerate the blood of a dog with high intestinal obstruction as long as the latter is still in good condition. The removal of the duodenal portion of the pancreas of the dog with high intestinal obstruction improved the recipient's chance to survive. Transfusion of blood from a dog that had had a high intestinal obstruction for twenty-five days was always fatal to the recipient. Toxic manifestations became evident soon after the intestine had been obstructed. The ensuing loss of water and salts interferes with the processes of detoxification. The removal of the pancreas, the chief focus of intoxication, prolongs the life of the experimental animal up to a certain point, beyond which there develop toxic substances from other sources.

### Medizinische Klinik, Berlin

32: 1061-1092 (Aug. 7) 1936. Partial Index

- Physical Exercises and Heart. F. Külbs.—p. 1061.
- Obstetrics in Home and Clinic. F. C. Geller.—p. 1064.
- \*Apparent Change in Blood Group in Patient with Leukemia in Case of Intolerance of Blood from Universal Donor. W. Neumann and W. Neugebauer.—p. 1067.
- Headache and Its Physical Biologic Treatment. Hanse.—p. 1071.
- Severest Argyria Universalis Following Internal Use of Silver Nitrate Solution: Case. L. M. Kugelmeier.—p. 1073.
- \*Experiences with Calcium-Quinine Treatment of Pneumonias During Childhood. Annemarie Sebian.—p. 1075.
- \*Experimental Studies on A Avitaminosis. M. Frank.—p. 1077.

**Apparent Change in Blood Group.**—Neumann and Neugebauer discuss the history of a patient with chronic lymphatic leukemia in whom, by means of the test serums that are available on the market, the blood group AB had been determined. In repeated transfusions it was noted that the patient tolerated blood from B donors well, whereas he developed fever in response to the transfusion of A blood. It was decided to determine the blood group once more and at this time only the B agglutinin could be detected. Repeated examinations with other test serums again and again revealed only the B agglutinin. This case demonstrates that for the determination of blood groups merely the use of purchasable test serums is inadequate. The authors emphasize that, in every case of blood group determination, the serum of the patient should be tested as well. When the patient whose case is reported later required further blood transfusions, a donor of the so-called universal group (O) was taken. This transfusion, however, caused a severe hemolysis, which in turn resulted in hemoglobinuria. In the subsequent hemolysis cross test the erythrocytes of the patient were almost momentarily hemolyzed. Thus this case demonstrates the absolute necessity of the hemolysis cross test in blood transfusion, particularly if a so-called universal donor of group O is to furnish the blood. Following a discussion of the serologic aspects of this case, the authors emphasize that in the various types of anemia the group O should be used only if it represents the identical group. Moreover, in any case of blood transfusion the use of blood of the same group is always the method of choice.

**Calcium-Quinine Treatment of Pneumonias During Childhood.**—Sebian reports that the calcium-quinine therapy of pneumonia was used in thirty cases at the children's clinic of the German University in Prague. The medicament was always administered by intramuscular injection in daily doses

of 5 cc. In fourteen cases of lobar pneumonia the calcium-quinine therapy was found to effect neither a reduction in the duration of the disease nor any other improvement. In the sixteen patients with bronchopneumonia it produced much better results. To be sure, in cases of bronchopneumonia in which the calcium-quinine was not given before the fourth day, the disease took the usual course; but in cases in which it was given within the first three days, the fever fell critically on the following day and the general condition of these patients was favorable.

**Experimental Studies on A Avitaminosis.**—In summarizing his experimental studies, Frank states that with the same deficiency diet rats develop the symptoms of A avitaminosis sooner during the early part of the year than during summer and early fall. The vitamin A is subject to seasonal fluctuations in these animals. It is lowest in the late fall and winter months, begins to rise in February, and reaches its highest values in the summer months, as the result of the presence of large amounts of the vitamin or of the previtamin in the diet. The beginning rise in the vitamin content during February cannot be explained by a greater intake in the food and must be due to other than alimentary factors.

### Strahlentherapie, Berlin

56: 541-720 (Aug. 15) 1936. Partial Index

- Experiences in Treatment of Lymphogranulomatosis. W. Braensch.—p. 541.
- \*Indications for Ray Treatment and for Surgery in Fibromyomas of Uterus. C. Bécélère.—p. 548.
- \*Total Roentgen Therapy. J. Belot.—p. 560.
- Roentgen Treatment of Endarteritis Obliterans. P. Cottenot.—p. 569.
- Roentgen Treatment of Cancers and Periodicity of Epithelial Changes. H. Coutard.—p. 577.
- Malignant Bone Tumors Cured by Irradiation. A. U. Desjardins.—p. 583.
- Wilson Exposures on Penetration of Roentgen Rays Through Material. L. Grebe.—p. 603.

### Ray Treatment and Surgery in Fibromyomas of Uterus.

—Claude Bécélère points out that Antoine Bécélère said in 1912 that roentgen therapy can be tried in nearly all fibromyomas of the uterus, without consideration of form and size of the tumor and of the age of the patient. To be sure, a correct diagnosis of fibroma is an absolute requirement. The author thinks that, if the height of the tumor above the symphysis is regularly measured at intervals of eight days an erroneous diagnosis will soon be discovered and the ray therapy can be interrupted and an operation can be done. In an evaluation of the advantages and disadvantages of ray treatment and surgical treatment, the author lists the following factors as the advantages of roentgen therapy: absence of mortality, absence of pain and no interruption in the working capacity. The disadvantages of roentgen treatment are the possibility of a diagnostic error, incomplete reduction of the tumor and possibility of later complications. In discussing surgical treatment, the author mentions as the chief advantages that it verifies the diagnosis, that it makes a myomectomy possible, that it permits the complete removal of a tumor no matter how large and that it permits a radical treatment which will prevent later complications. However, these distinct advantages involve just as great disadvantages; namely, mortality, pains and interruption of the working capacity. Further, the author gives his attention to the indications for roentgen therapy as well as for operation and then discusses the complications that arise during and after treatment. In the difficult differential diagnosis of the uterine hemorrhages after completion of the treatment, the persistence or cessation of hot flushes is an important symptom. The author says that Antoine Bécélère directed attention to this symptom and demonstrated that it permits a decision as to whether the hemorrhage is only a return of the menstrual flow or an abnormal metrorrhagia. Thus it will be known whether the irradiation should be resumed or avoided or whether a secondary carcinoma of the corpus uteri should be searched for.

**Total Roentgen Therapy.**—Belot points out that total irradiation is possible only as distant irradiation. To be sure, the two terms should not be confused, since distant irradiations include all those that are given from a distance of more than 50 cm. In total roentgen therapy it requires a distance of about 3.5 meters in order to obtain a uniform irradiation for

an adult of average size. The total roentgen therapy is advisable for disorders that involve the entire organism, for instance, diseases of the blood and of the hematopoietic organs, also for dermatoses, such as erythrodermias, certain forms of generalized edema, pruritus, mycosis fungoides and the lymphocytomas of the skin. The hardness of the rays and the filtration that is to be used in each case must be determined on the basis of the depth of the disease process. In diseases of the blood, a hard irradiation is required which, in order to reduce the intensity, is filtered to a high degree of homogeneity. In dermatoses, on the other hand, in which the irradiation of the deeper tissues is to be reduced to a minimum, soft rays are used. The author applied the total roentgen irradiation usually with the roentgen tube high up, the patient lying on a mattress on the floor. After discussing certain details of the technic, he gives his attention to the indications for the total roentgen irradiation. He admits that these are not strictly defined as yet. So far, it is advisable in only a limited number of disorders, but in these it is definitely superior to the irradiation of only parts of the body.

### Wiener klinische Wochenschrift, Vienna

49: 1245-1272 (Oct. 9) 1936. Partial Index

- Clinical Significance of Fat Embolism. R. von Oppolzer.—p. 1245.
- Sleep and Hibernation. H. Hoff.—p. 1248.
- \*Spontaneous Pneumothorax. A. Schick.—p. 1250.
- \*Traumatic Atrophy of Fat, Insulinlipodystrophy. M. Rosenberg and F. Berliner.—p. 1253.
- Effect of Work on Psychic State. J. Aiginger.—p. 1256.
- Roentgenology and Hypophysis. A. Schüller.—p. 1259.

**Spontaneous Pneumothorax.**—According to Schick there exist, besides the traumatic variety, two distinct types of spontaneous pneumothorax, the symptomatic and the idiopathic. Symptomatic spontaneous pneumothorax may develop in the course of any destructive pulmonary lesion. It is observed most frequently in tuberculous disease of the lung (90 per cent) but also in gangrene, abscess, infarct or tumor of the lung. The author calls attention to the occurrence of the so-called benign or more correctly idiopathic spontaneous pneumothorax developing in the absence of signs or symptoms of any disease process in the lung. Because of the absence of pulmonary signs and the radiation of pain into the upper part of the abdomen or the cardiac area, the onset of this form of pneumothorax may be confused with an attack of angina pectoris. Days later there may develop a tension pneumothorax with displacement of the mediastinal structures and dyspnea. It has been observed predominantly in younger persons of the male sex. A tendency to recurrence and a strong familial predisposition were noted. The prognosis is almost always good. According to the author, B. Fisher was first to call attention, in a recent communication, to the existence of peculiar emphysema-like structures in the pulmonary apexes which he had observed in necropsies. He believed that the rupture of these was responsible for the origin of so-called idiopathic spontaneous pneumothorax. Fisher believed these structures to be the result of a chronic inflammatory process giving rise to localized atrophy of the alveolar tissue, to compression of bronchioles by proliferating connective tissue, and to a peculiar valve formation at the base of such vesicles through cicatricial contraction. A somewhat different view is advanced by Schminke and by Kjaergaard, who regard congenital pulmonary cysts as the etiologic factor. The rupture of a superficially located cyst or cysts gives rise to pneumothorax. They regard these cysts as developmental congenital anomalies of pulmonary alveoli. The author reports one case from the clinic of Julius Bauer in Vienna in which he had the opportunity to demonstrate on the basis of clinical data and roentgenologic peculiarities the pulmonary cyst or apical cicatricial vesicle (B. Fisher) as the cause of an idiopathic spontaneous pneumothorax.

**Traumatic Fat Atrophy.**—According to Rosenberg and Berliner, Depisch was the first to describe, in 1926, local disappearance of fat in diabetic patients on insulin treatment. Depisch named it "insulinlipodystrophy." The one observation reported in common by several authors was that the lesion occurred much more frequently in women than in men. Two possibilities were advanced as to its etiology. One was that of a specific as yet unexplained hormone action of insulin,

and the other that of a chemical or traumatic damage of the act of injection. Graham and Carmichael believed that a certain amount of the lipolytic ferment in the insulin, because of its derivation from the pancreas, was responsible for the local fat necrosis. The presence of such a ferment in the insulin, however, was not demonstrated. Avery believed the necrosis to be the result of a long continued local inflammatory process resulting from injections. This view was not confirmed by histologic studies. The authors in their study of the subject found that among 4,000 diabetic patients treated on insulin therapy the incidence of local fat atrophy was less than 0.5 per cent. The predisposition on the part of the female sex was marked. There were twenty-seven of the female and five of the male sex. The age of the patient and the duration of diabetes played no part in the incidence. Duration of the injection treatment, however, was an important factor. Fat atrophy was not seen in patients who received injections less than three months. In a study of 1,000 consecutive patients admitted to a dispensary, the authors observed the same phenomenon in four nondiabetic patients and in one with mild diabetes. None of the five received injections of any kind. Four were women. In three the area of dystrophy on the thigh came in contact with the rim of a tub in which the patients did their daily washing of clothes. Because of a similar frequency in the groups and the clear evidence of trauma in the second group, the authors are inclined to ascribe the phenomenon of local fat atrophy to oft repeated trauma rather than to some local or general effect of insulin.

### Novyy Khirurgicheskiy Arkhiv, Dnepropetrovsk

36: 1-159 (No. 141) 1936. Partial Index

- Intracardial Injections of Epinephrine in Chloroform Syncope. Ya. M. Britvan.—p. 1.  
Comparative Evaluation of Modifications of the Second Billroth Operation of Gastric Resection. A. A. Vikhman.—p. 21.  
Contraindications to Removal of Varicose Veins of Lower Extremities. M. A. Egorov.—p. 31.  
Local Avitaminosis. S. D. Balakhovskiy, L. A. Khimenkova and F. M. Cherkassov.—p. 49.  
\*Phrenico-Exeresis. A. G. Gilman.—p. 65.

**Evaluation of Phrenico-Exeresis.**—Of 220 patients with pulmonary tuberculosis subjected to phrenico-exeresis at the Sanatorium Livadia, Gilman was able to make a follow-up study of ninety-four. He did not find many deviations from the normal course in the phrenic nerve. Those encountered in the course of the operation are due to the position of the patient's neck and to altered relationships of the tissues brought about by operative manipulations. Anatomic studies alone were to be relied on for the study of anomalies of the course of the phrenic nerve. The extent of the nerve excised varied from 10 to 40 cm. There is a relationship between the degree of paralysis of the diaphragm attained and the therapeutic effect. Clinical cure was obtained in 13.8 per cent of the patients, improvement in 29.8 and no change in the condition of 15.9; 11.7 became worse and 28.8 died in from one to six years. The author believes that the operation of phrenico-exeresis is indicated in isolated lesions of the base, with or without tissue destruction, but with tubercle bacilli in the sputum; in recent limited processes of other portions of the lung when induction of artificial pneumothorax is not possible; in the presence of blood spitting or hemorrhages, and when artificial pneumothorax cannot be induced and thoracoplasty is contraindicated because of the condition of the opposite lung. Phrenico-exeresis has no permanent effect in diffuse chronic cirrhotic lesions with cavities, in which the operation has only a palliative character. Phrenico-exeresis is not to be recommended as a preliminary stage to thoracoplasty. In the presence of adhesions of the base and apical involvement, phrenico-exeresis will aid a partial artificial pneumothorax in bringing about partial collapse of the lung and of a cavity. Phrenico-exeresis cannot be considered a substitute for thoracoplasty in cases in which the latter is indicated. Phrenico-exeresis may give a good result in extensive chronic lesions if combined with a prolonged sanatorium management. The author advises alcoholization of the phrenic nerve in cases in which a satisfactory effect may be anticipated in from four to six months or when total paralysis of the diaphragm is not desirable because of the condition of the opposite lung.

### Hospitalstidende, Copenhagen

79: 893-920 (Sept. 1) 1936

Cell Number and Cell Counting in Cerebrospinal Fluid. H. Jessen.—p. 893.

- \*Tumors Originating from Striated Musculature: Case of Rhabdomyosarcoma. J. Engelbreth-Holm.—p. 905.  
Attempt at Serum Treatment of Chicken Leukosis. J. Engelbreth-Holm, A. Rothe Meyer and E. Uhl.—p. 915.

**Tumors Originating from Striated Musculature.**—Engelbreth-Holm states that benign rhabdomyomas with striation are found practically only as congenital tumors in the heart and, because of their localization, have a grave prognosis. Besides, in striated musculature rhabdomyosarcomas most often appear in the urogenital tract, fifty such cases being known (Geschichter). He has found thirty-six cases of rhabdomyosarcomas in striated musculature in the literature; of the twelve in which sex and age were named, eight were in male and four in female patients, aged from 7 months to more than 50 years. Rhabdomyosarcomas are highly malignant, with marked invasive growth, frequent metastasis and usually recurrence after attempted extirpation, and are little or not at all sensitive to irradiation. Macroscopically they present the fishmeat appearance typical of sarcomas; microscopically the picture is polymorphic but there are always more or less numerous larger irregular cells with striated fibrils. Degenerative phenomena are frequent. The case described was that of a man, aged 75, in whom gradually developing total paresis of the left facialis set in two years before admission, with an increasing swelling on the left side of the neck, impaired hearing in the left ear and pronounced loss of weight. The swelling was firm, nodular, not tender, and from it a firm nodular strand extended into the left supraclavicular region, where a gland of the size of a pigeon's egg was found, together with smaller glands. In the left submaxillary region was a gland of hazelnut size. The tumor seemed to diminish slightly on roentgen treatment, but in three weeks metastases to the throat were noted. Rapid aggravation followed, symptoms of cardiac insufficiency appeared and the tumor of the neck increased in size. Death occurred seven weeks after admission. The histologic diagnosis was rhabdomyosarcoma. The author says that, while primary tumors in striated musculature must in some cases develop from broken-off germs, malignant myosarcomas can develop from "normal" muscle tissue as the result of exogenous influence.

### Ugeskrift for Læger, Copenhagen

98: 853-884 (Sept. 10) 1936

- Experiences with Pantocain Anesthesia. K. Eriksen.—p. 853.  
Transient (Unspecific) Wassermann-Kahn Reaction. P. Krag.—p. 855.  
Adjustment of Hemeralopia Charts. G. F. Vraa-Jensen.—p. 859.  
\*Fatal Intoxication with Trichlorethylene in Man with Scrofula and Miliary Tuberculosis: Medicolegal Casuistic Number 5. E. H. Hansen.—p. 862.  
\*Investigations on Occurrence of Hemolytic Streptococci in Throat in Patients With and Without Disturbances in Upper Respiratory Tract: Their Significance in Origin of Angina. H. Rasmussen.—p. 864.

**Fatal Intoxication with Trichlorethylene.**—Hansen says that this case is the first instance of fatal trichlorethylene poisoning to be reported in Denmark. The patient was one of two men occupied, mostly in a reclining position, with clean-up work in the small space under the floor of the engine room of a motorboat, and exposed to the fumes from the room above, where trichlorethylene, heated to about 100 C., was being used in cleaning. The patient's resistance was undoubtedly lessened by the tuberculosis of the mediastinal glands and miliary spread in the lungs and pleura, liver and spleen disclosed on necropsy. The fellow worker, suffering from trichlorethylene intoxication, recovered after a protracted course.

**Hemolytic Streptococci in Throat.**—In sixty-one out of ninety-three patients with disturbances of the upper respiratory tract and eleven out of twenty-six without such disorders, hemolytic streptococci were found in the throat. Comparison of the results on admission and on discharge showed the streptococci to be inconstant. In this material nine cases of angina occurred; in all hemolytic streptococci were present in the throat, mostly in large numbers or in pure culture, and in half of the cases hemolytic streptococci had been established before the angina. Seven of the cases were from a large ward and two from a small one. Rasmussen says that, since nosocomial anginas mainly occur in large wards, the cause appears to be an exogenous infection and it is doubtful that the hemolytic streptococci are the active virus.

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## HYPOPARATHYROIDISM

### THE TREATMENT OF CHRONIC CASES

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Hypoparathyroidism may occur spontaneously, the so-called idiopathic variety; more frequently, however, it follows operation for the removal of part or all of the thyroid gland. During such an operation the parathyroid bodies may be injured, their blood supply may be interfered with or they may be accidentally removed, and as a result of any of these mishaps a state of hypoparathyroidism may result. Fortunately, owing either to recovery from trauma to the glands or their blood supply or to hypertrophy of remaining parathyroid tissue, the state of hypoparathyroidism may be acute and easily managed, especially with the judicious use of parathyroid extract. However, not infrequently a state of postoperative hypoparathyroidism may exist and require constant treatment throughout the remainder of the patient's life.

Recently we have had an opportunity to study, extensively, two persons with chronic postoperative parathyroid tetany. Under carefully controlled conditions, we have measured the effect of various remedies frequently employed in the treatment of this condition. It is our purpose in this communication to present the data obtained and the principles of treatment suggested by this study, and to contribute an explanation for the "refractiveness" to parathyroid extract so frequently encountered when this hormone is injected over a period of time.

#### REPORT OF CASES

CASE 1.—L. R., a woman, aged 36, had a thyroidectomy in this hospital for exophthalmic goiter on June 24, 1929. The basal metabolic rate promptly fell to normal and has remained so ever since. June 28, 1929, tetany, with carpopedal spasm occurred. She was treated with parathyroid extract subcutaneously, and calcium lactate and very small doses of viosterol orally. Eight days later the concentration of calcium in the blood serum was 7.0 mg. per hundred cubic centimeters of serum, and it steadily increased until it was 10.7 mg. August 20, when she was discharged from the hospital. She was advised to eat a high calcium diet and to take 2 Gm. of calcium lactate orally, and 0.5 cc. of parathyroid extract, subcutaneously each day.

She continued to feel well until January 1930, when she contracted influenza. She ceased taking the parathyroid extract

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at this time. In October 1930 her finger nails dropped off. They soon regrew, but they dropped off on two more occasions. In November 1930 she noticed dimness of vision, which became progressively worse, owing to the formation of cataracts. In February 1931 she began having frequent attacks of tetany, and almost constant pain and stiffness of the muscles of the extremities. She was successfully treated, elsewhere, with a high calcium diet, 6 Gm. of calcium lactate, and 3 Gm. of ammonium chloride orally, and 1 cc. of parathyroid extract subcutaneously daily. She continued on this plan of treatment until October 1933, when she again came to the University Hospital complaining of muscle cramps and pain in the extremities. She exhibited a brisk Chvostek's sign. The serum calcium was 5.4 and the serum phosphorus 7.3 mg. per hundred cubic centimeters. She was treated with a high calcium diet, from 3 to 12 Gm. of calcium lactate and small amounts of viosterol orally and from 1 to 2 cc. of parathyroid extract subcutaneously each day. The improvement, however, was not as great as before and, on several occasions, injections of 10 per cent calcium gluconate were given intravenously to relieve painful muscle spasms. December 18 the serum calcium was 7.3 mg. per hundred cubic centimeters. The cataracts were removed and the patient was discharged, with the advice to continue the treatment instituted in the hospital.

In January 1934 dicalcium phosphate ( $\text{CaHPO}_4$ ) was substituted for the calcium lactate. Within a few days tetany occurred, which disappeared when calcium gluconate was taken instead of dicalcium phosphate. She was relieved of severe cramps and spasms, although the muscles of the extremities were stiff much of the time, so that she could not use her hands and arms well.

She returned again in July 1934, complaining of muscle cramps. Chvostek's and Trousseau's signs were present. The serum calcium was 6.1 mg. per hundred cubic centimeters. She failed to improve satisfactorily when treated as she had been during the previous hospitalization. When she was discharged, Aug. 17, 1934, the serum calcium was only 6.2 mg. per hundred cubic centimeters.

At home she became progressively worse, so that it was necessary to inject calcium chloride intravenously on numerous occasions, to relieve tetany. Jan. 9, 1935, she returned to the hospital. Carpopedal spasm was so severe that she was unable to use the hands. Sitting in a chair would precipitate cramps of the leg muscles. Chvostek's and Trousseau's signs were marked. The serum calcium and phosphorus were 4.8 and 7.1 mg. respectively per hundred cubic centimeters. Again treatment with high calcium diet, parathyroid extract, calcium lactate and small amounts of viosterol did not cause satisfactory improvement.

#### METABOLISM STUDIES

March 6 a study of the calcium and phosphorus exchange and serum concentrations was begun. The patient was fed the same diet day after day until June 7. This diet was rich in calcium, since it included 1,500 cc. of milk daily; the calcium-phosphorus ratio was 1.36. After a period of adjustment to the diet, the observations appearing in chart 1 were made. The excretion of calcium and phosphorus is charted in three day periods. At the beginning of each period, blood was removed for serum calcium and phosphorus determinations. The methods used have been described in a previous communication.<sup>1</sup>

1. Freyberg, R. H., and Grant, R. L.: A Study of the Calcium and Phosphorus Metabolism in a Verified Case of Pituitary Basophilism, Arch. Int. Med. 58: 213-228 (Aug.) 1936.

This study reveals the following significant facts: A high calcium diet (with 1,500 cc. of milk daily) alone caused no improvement. When 240 cc. of a 5 per cent solution of calcium lactate was taken there was a prompt rise in the serum calcium and a fall in serum phosphorus and distinct clinical improvement, with disappearance of tetany. The calcium lactate was then abruptly stopped, and inside of twenty-four hours the

with period 25, the standard preparation of viosterol (250 D) was used, 3 cc. (30,000 U. S. P.) being given daily. No change occurred.

Desiccated thyroid, 0.2 Gm. daily, administered from period 25 through 29, had no distinct beneficial effect.

Study of the calcium and phosphorus exchange was discontinued after period 29. The patient continued to receive the same type of diet, 240 cc. of 5 per cent solution of calcium lactate and 2 cc. of viosterol daily until June 19, 1935. On this day the amount of calcium lactate was doubled. No significant change in serum calcium or phosphorus or in the clinical condition resulted.

June 29, milk was omitted from the diet. No other change was made. The diet was thus made comparatively poor in phosphorus and calcium, but with the calcium lactate medication the intake of calcium was high while that of phosphorus was low—the Ca/P ratio being 5.3. After a period of adjustment to this new diet, the calcium and phosphorus exchange was again studied. Chart 1 shows the decrease in serum phosphorus and the rise in serum calcium that occurred with the change in the Ca/P ratio of the ingesta.

The patient was discharged from the hospital on this last plan of treatment. She remained well at home, until October 10, when she returned for further study.

From October 21 to November 4 the patient was fed a diet made as low in phosphorus as possible while still keeping it adequate in other respects. (Egg albumin was used as the chief source of protein. The daily phosphorus intake was calculated to be about 0.4 Gm.). The serum phosphorus fell slightly and the calcium rose (chart 2). The diet was then changed again to the "low phosphorus" type previously used (omission of milk, chiefly).

Parathyroid extract was again injected subcutaneously, in doses larger than previously used, and again it was of no value.

After the patient recovered from an acute infection of the upper respiratory tract (which affected the calcium and phosphorus metabolism unfavorably), 1.8 Gm. of magnesium carbonate was given daily for two weeks. The serum phosphorus decreased and the serum calcium first increased and then fell. It was thought that the patient was not benefited by this medication.

The effect of parathyroid extract injected intravenously was next studied, in a manner similar to that used by Ellsworth.<sup>4</sup> While the patient was receiving nothing by mouth but 200 cc. of water hourly, the effect of 1 cc. of the drug was measured

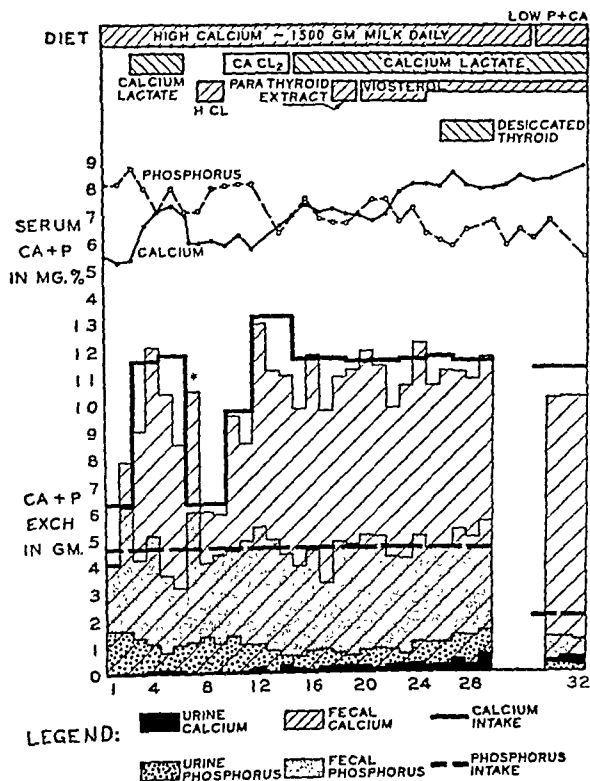


Chart 1.—Calcium and inorganic phosphorus metabolism during the first portion of the study of case 1. The exchange of these elements is represented by three day periods. Star indicates two days.

serum calcium had fallen to such a degree that the patient had a carpopedal spasm. Beginning with period 8, hydrochloric acid was given in large amounts with the hope that the absorption of calcium might be increased or that calcium would be liberated from the skeleton and thus raise the concentration of serum calcium. However, no benefit resulted. Beginning with period 10, a 10 per cent solution of calcium chloride was administered. It was thought that this acid-producing calcium salt not only would increase the calcium intake but might aid in absorption of calcium or in the liberation of this element from bony storehouses and would thus be of greater benefit to the patient than calcium lactate. When 30 cc. of this calcium chloride was given daily (supplying 1.16 Gm. of calcium), no benefit resulted. When the dose was doubled the serum calcium rose, but at a rate no greater than observed when less than the equivalent amount of calcium was supplied as calcium lactate; the serum phosphorus fell. The excretion of calcium in the urine increased, but there was no evidence of increased absorption. Calcium chloride was accordingly stopped, and 240 cc. of 5 per cent calcium lactate solution was given daily throughout the remainder of the first portion of this study.

Parathyroid extract was injected subcutaneously in 0.4 cc. doses daily through periods 18 and 19.<sup>2</sup> The patient was in no way benefited by it. Beginning with period 20, a large daily dose of irradiated ergosterol was administered. An especially concentrated solution<sup>3</sup> of viosterol was used, and an amount supplying 200,000 U. S. P. vitamin D units was given daily. There was a distinct rise in serum calcium and fall in serum phosphorus following this addition to the treatment. Beginning

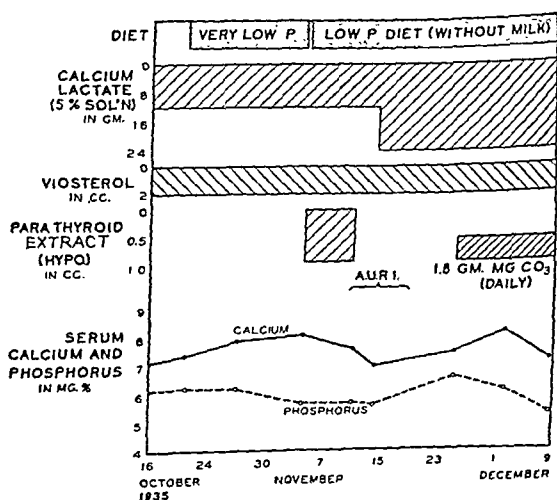


Chart 2.—Serum calcium and phosphorus values during the second part of study of case 1. A. U. R. I., acute upper respiratory infection.

by the quantity of phosphorus excreted hourly in the urine. Immediately after the drug was injected there was a distinct increase in urinary phosphorus, which continued through the four hour period of study (table 1). On the following day 4 cc. was injected intravenously. This amount caused almost

2. Throughout this paper, the dosage of parathyroid extract is expressed in cubic centimeters in order to avoid confusion that might result if the dosage were measured in units, since recently the unit strength of parathyroid extract has been changed.  
3. Kindly supplied by the Winthrop Chemical Company.

4. Ellsworth, Read, and Nicholson, W. M.: Further Observations upon the Changes in the Electrolytes of the Urine Following the Injection of Parathyroid Extract, *J. Clin. Investigation* 14: 823-829 (Nov.) 1935.

exactly four times the urinary excretion of phosphorus during the same interval of time as did 1 cc. on the previous day. The concentrations of calcium and phosphorus in the serum were not significantly changed following the first intravenous injection; after the larger dose the serum phosphorus was slightly lower, and the calcium also lower. Further study of the effect of parathyroid extract injected intravenously was not made, because almost immediately after the second injection the patient had a reaction characterized by faintness and

TABLE 1.—Effect of Parathyroid Extract Injected Intravenously in Case 1\*

Date	Hour	Phosphorus in Urine, Mg.	Serum Calcium, Mg. %	Serum Phosphorus, Mg. %
12/ 9/35	6-7 a.m.	Trace		
	7-8	Trace		
	8-9	1	8.2	6.2
	9	1 cc. of parathyroid extract intravenously		
	9-10	9		
	10-11	9		
	11-12	6		
	12-1 p.m.	6		
		— (30)		
12/10/35	6-7 a.m.	4	8.2	6.4
	7-8			
	8-9			
	9	4 cc. of parathyroid extract intravenously		
	9-10	86		
	10-11			
	11-12			
	12-1 p.m.			
		32		
		— (128)		
	1-5	46		
	5-8	25		
12/11/35	8 a.m.	..	7.5	6.1

\* The patient received nothing by mouth but 200 cc. of water hourly.

apprehension, rapid pulse and low blood pressure, followed by headache, extreme weakness and slight fever. Ten days later, severe generalized pruritus developed. This reaction was considered to be due to foreign protein. The parathyroid extract used was found to contain 0.4 per cent of protein by sulfosalicylic acid precipitation.

The effect of subcutaneous injections of parathyroid extract in amounts comparable to the intravenous doses was next tested in a similar way. The patient was fed a constant diet, in order that changes in phosphorus excretion might be significant. The urinary phosphorus decreased and the serum phosphorus increased during the period of therapy (table 2).

In January 1936 the last period of study was begun. A constant low phosphorus diet, a large amount of calcium lactate in 5 per cent solution, and 2 cc. of viosterol were given daily throughout this study. The daily urinary phosphorus excretion was measured in addition to the serum calcium and phosphorus determinations. It was observed (chart 3) that parathyroid extract injected intramuscularly was of no benefit. The effect of subcutaneous injections of a different preparation of parathyroid extract was then tested. The first trial seemed to benefit the patient. A subsequent trial showed it to be of no value, except possibly when given in very small doses. Later study showed that small doses also were valueless.

The disturbing effect of infection on calcium and phosphorus metabolism is again illustrated, especially during February 11-16, when the patient had a fever.

Lastly, the effect of frequent intravenous injections of calcium gluconate was tested. March 14, 9 cc. of a 10 per cent solution of calcium gluconate was injected twice daily, and on March 15 and 16, 10 cc. was injected three times daily. The serum calcium rose to only 8.4 mg. per hundred cubic centimeters and the serum phosphorus fell to 5.7 (chart 3). Most of the injected calcium was found in the urine of those days. In as short a time as four days most of the improvement was lost, illustrating the transient benefit of injected calcium salts.

CASE 2.—V. G., a woman, aged 35, had a thyroidectomy performed (elsewhere) in June 1929 for adenomatous goiter with hyperthyroidism. Following operation, progressive deafness and dimness of vision occurred, and her weight increased quite

rapidly. In February 1930 tetany began. In June 1930 she began taking "two tablets" of thyroid extract (? 0.13 Gm.) daily and thereafter noticed an improvement, especially in hearing. Vision gradually became worse and the muscle spasms more frequent. Since early in 1932, treatment had consisted of a high calcium diet, a calcium salt orally and at times intravenously, and tablets of parathyroid extract. On this plan of treatment she had no severe spasms, although most of the time her muscles were so cramped and painful that she was incapacitated.

Feb. 15, 1935, she came to the University Hospital. Bilateral incipient cataracts and Chvostek's and Trousseau's signs were present. The serum calcium was 7.8 and phosphorus 6.1 mg. per hundred cubic centimeters. A high calcium diet and 12 Gm. of calcium gluconate daily relieved the severe muscle spasm. The cataracts were then treated, after which the following studies were made:

#### CALCIUM AND PHOSPHORUS STUDIES

Throughout the first period of study a high calcium diet (1,500 cc. of milk daily) was fed. Ten Gm. of calcium lactate powder was given daily from March 26 through April 9, without benefit (chart 4). A solution of calcium lactate, 240 cc. daily, was then given with no noticeable improvement. Sixty cc. of a 10 per cent solution of calcium chloride was next administered daily. A slight increase in serum calcium and no change in serum phosphorus resulted.

Beginning April 23, 240 cc. of 5 per cent solution of calcium lactate was given and also 3 cc. of viosterol (30,000 U. S. P. vitamin D units daily). There was a prompt increase in serum calcium and decrease in serum phosphorus, accompanied by clinical improvement. Doubling the amount of calcium lactate caused no added benefit. Beginning May 7, 0.4 cc. of parathyroid extract daily was injected subcutaneously. The increase in serum calcium and the clinical improvement were striking. (The serum phosphorus change could not be noted because the value at the beginning of this therapy was not known.) When the parathyroid extract was stopped the serum calcium promptly decreased and the phosphorus rose. These serum values changed toward the normal when the parathyroid extract was again injected.

Chart 4 shows the low level of basal metabolism that existed when no thyroid medication was given and the prompt increase resulting from the administration of desiccated thyroid. During this study no significant relationship between the serum calcium and phosphorus and the rate of basal metabolism or thyroid medication was observed.

TABLE 2.—Ineffectiveness of Parathyroid Extract Injected Subcutaneously in Case 1 While a Constant Low Phosphorus Diet and a Constant Supply of Water Was Being Given

Date	Parathyroid Extract Subcutaneously, Cc.	Phosphorus in Twenty-Four Hour Urine, Mg.	Serum Calcium, Mg. %	Serum Phosphorus, Mg. %
Dec. 16	None	60		
17	None	92		
18	None	76		
19	2.0	38	7.5	6.9
20	3.0	50		
21	4.0	26		
22	3.0	22		
23	None	23	7.9	7.1
24	None	12		

At the end of these studies the patient was discharged. She was advised to take a high calcium diet (1,500 cc. of milk daily), 240 cc. of 5 per cent solution of calcium lactate, 1 cc. of viosterol, 0.1 Gm. of desiccated thyroid orally, and 0.2 cc. of parathyroid extract, subcutaneously, daily. She remained in good health until December 1935, when she was unable to obtain all the medications (especially desiccated thyroid and frequently parathyroid extract). Muscle spasms and cramps recurred.

She returned to the hospital Jan. 27, 1936. Chvostek's and Trousseau's sign were present. Ten cc. of 10 per cent calcium

levulinate was injected intravenously for carpopedal muscle spasm. Further studies were carried out and are presented in chart 5.

She was fed a diet low in phosphorus and calcium (no milk) and 18 Gm. of calcium lactate in 5 per cent solution. No viosterol was given in order that the effect of parathyroid extract might be studied independent of any effect of this vitamin D concentrate. Parathyroid extract injected in 0.2 cc. doses subcutaneously during the first few days of study did

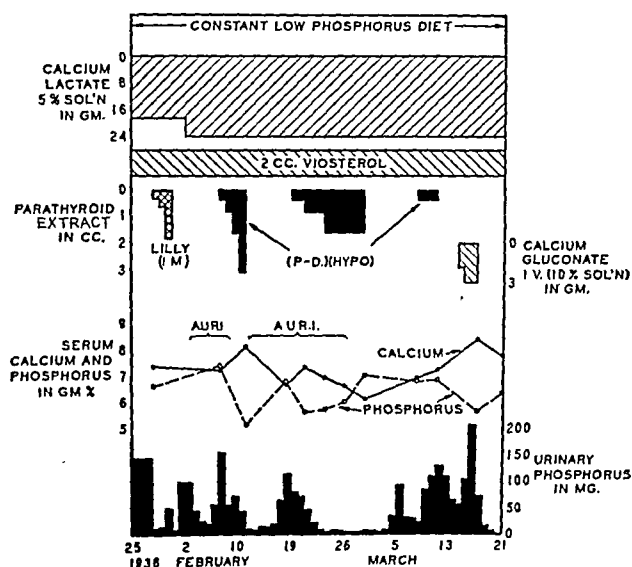


Chart 3.—Serum calcium and phosphorus and urinary excretion of phosphorus during the last period of study of case 1. A. U. R. I., acute upper respiratory infection.

not materially improve the patient, and it was thought that she might have become "refractive" to the extract. After a period without parathyroid extract, during which the serum calcium fluctuated around 8 mg. and the serum phosphorus rose slightly, it was found that 0.8 cc. of parathyroid extract daily injected subcutaneously caused a prompt increase in serum calcium and decrease in serum phosphorus, so that both values became normal within five days. When the amount of parathyroid extract was decreased, the serum calcium and phosphorus were again altered unfavorably. The patient was thus shown not to be refractive to the extract.

The same daily dose of parathyroid extract was then injected subcutaneously, in an amount sufficient to maintain the serum calcium and phosphorus values constant, and the calcium just at the low range of normal. Five Gm. of disodium acid phosphate in capsules was then fed daily, for five days. The serum calcium decreased. It appears that the administration of disodium acid phosphate diminished the effectiveness of the parathyroid extract.

The rise in serum calcium shown at the beginning of chart 5 might have been due to thyroid medication; but definite evidence that thyroid substance is of significant benefit to the calcium and phosphorus metabolism was not obtained later.

#### COMMENT

It should be noted that practically no calcium was excreted in the urine in case 1 when the serum level was below 7 mg. per hundred cubic centimeters (chart 1); at higher serum concentrations this element was excreted in normal amounts. This "threshold" phenomenon was found also by Albright and Ellsworth.<sup>5</sup>

Chart 3 shows the irregular excretion of phosphorus in the urine when the intake of this element was constant. We are unable to explain this.

The unfavorable influence of infection is repeatedly illustrated by case 1. In each case the menses were likewise found to have an unfavorable effect.

These studies serve admirably to indicate the considerations that are important in the treatment of chronic hypoparathyroidism. The data illustrate the benefit that is derived from certain remedies and point out certain things to be avoided if best results are to be obtained. Individual differences in patients naturally will govern details, but on the basis of observations made in these cases the fundamental principles for satisfactory treatment may be stated.

**Diet.**—It should be remembered that the serum of patients with hypoparathyroidism is characterized by a low concentration of calcium and a high level of phosphorus. To correct these abnormalities it is logical that the intake of calcium should be high and the intake of phosphorus low. To provide an abundant calcium intake it has been customary to prescribe a diet rich in calcium. The chief source of dietary calcium is milk, which is also rich in phosphorus; accordingly, all high calcium diets are high phosphorus diets. To provide a high calcium and low phosphorus intake, one must therefore feed a low phosphorus diet (which will also be relatively low in calcium) and supplement this with a calcium salt.

Albright<sup>6</sup> has produced evidence to show that the primary effect of parathyroid extract is on phosphorus, causing an increased excretion of this element in the urine; the effect on calcium appears to be secondary. It would naturally follow, then, that one should compensate for the most fundamental disturbance resulting from a lack of parathyroid hormone by providing a low intake of phosphorus. Further, if the phosphorus intake is kept low while the calcium intake is high, absorption of the latter element is facilitated.

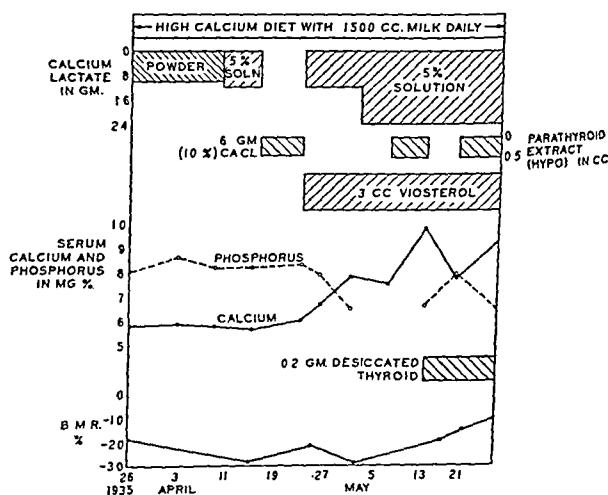


Chart 4.—Serum calcium and phosphorus levels and the basal metabolic rate during the first portion of study of case 2.

Shelling<sup>7</sup> has demonstrated the advantage of low phosphorus diets to parathyroidectomized rats. Shelling<sup>8</sup> and Ellsworth<sup>9</sup> have emphasized the importance of low dietary phosphorus in the treatment of parathy-

6. Albright, Fuller; Bauer, Walter; Ropes, Marion, and Aub, J. C.: Studies of Calcium and Phosphorus Metabolism: The Effects of the Parathyroid Hormone, *J. Clin. Investigation* 7: 139-181 (April) 1929.

7. Shelling, D. H.: Calcium and Phosphorus Studies: Effect of Calcium and Phosphorus of Diet on Tetany, Serum Calcium, and Food Intake of Parathyroidectomized Rats, *J. Biol. Chem.* 96: 195-214 (April) 1932.

8. Shelling, D. H., and Goodman, M. J.: Calcium and Phosphorus Studies: The Importance of Low Dietary Phosphorus in the Treatment of Parathyroid Tetany, *J. A. M. A.* 102: 669-673 (March 3) 1934.

9. Ellsworth, Read: The Diagnosis and Treatment of Parathyroid Underfunction, *Internat. Clin.* 3: 27-45 (Sept.) 1933.

5. Albright, Fuller, and Ellsworth, Read: Studies on the Physiology of the Parathyroid Glands: Calcium and Phosphorus Studies in a Case of Idiopathic Hypoparathyroidism, *J. Clin. Investigation* 7: 183-201 (June) 1929.

roid tetany in human beings. The advantage of a low intake of phosphorus together with a high intake of calcium is repeatedly illustrated by our studies. When patient 1 took dicalcium phosphate instead of calcium lactate, tetany occurred. Again, when calcium lactate was abruptly stopped while the same high calcium diet continued (period 7, chart 1), tetany occurred within twenty-four hours, whereas later, when the diet was abruptly changed so as to lower markedly the phosphorus (and the calcium somewhat), and the same amount of calcium lactate continued, the patient was improved. In case 2 the unfavorable effect of disodium acid phosphate was observed (chart 5).

The diet can be made quite low in phosphorus by omitting milk. A still greater restriction of phosphorus can be obtained by omitting other foods rich in phosphorus (see food tables) and the avoidance of excess amounts of meat.

**Calcium Medication.**—An abundant intake of calcium is of the greatest importance. Except to relieve acute muscular spasm, the oral administration will suffice. For the reason already stated, calcium phosphate should not be used. Calcium lactate, gluconate and chloride are the salts most commonly employed. In our experience, calcium lactate gave results as good as or better than did the chloride, and it was less nauseating. From 12 to 18 Gm. of calcium lactate should be given daily; greater amounts were not found to be of added benefit. We feel that it is advantageous to give this medication in solution, in order to allow maximal absorption.

For the relief of acute muscular spasm, calcium should be injected intravenously. Ten cc. of a 10 per cent solution of the gluconate, levulinate or chloride injected slowly is usually sufficient.

**Vitamin D.**—Preparations of vitamin D have been reported to be without value by some investigators,<sup>10</sup> harmful by others,<sup>9</sup> and indispensable by still others.<sup>11</sup> Boothby<sup>12</sup> reports excellent results from the use of from two to three teaspoonfuls of cod liver oil (vitamins A and D) daily. Stacey<sup>13</sup> states that it is possible to maintain patients free from symptoms and with normal blood conditions with the use of large doses of pure vitamin D (calciferol).

In each of our patients there was definite benefit observed from the use of large doses of irradiated ergosterol (viosterol). The sharp change toward normal values for both serum calcium and phosphorus are especially well demonstrated by case 2 (chart 4). It must be emphasized, however, that for satisfactory results vitamin D should be given in large doses. In our tests, for a short time we administered 200,000 U. S. P. vitamin D units daily, although most of the time we used from 20,000 to 40,000 units. Other investigators<sup>14</sup> have used from 2 to 5 mg. of vitamin D (from 80,000 to 200,000 units) daily, with splendid results.

The manner in which vitamin D benefits these patients is not fully understood. Bauer, Marble and Clafin<sup>14</sup> have shown that vitamin D is effective only

when the intake of calcium is high, and that its chief effect was to increase the absorption of calcium from the intestine. In case 1 the fecal calcium was not noticeably decreased by the administration of viosterol, so that in this patient vitamin D must have been effective in another way.

**Acid Therapy.**—Aub<sup>15</sup> has reported improvement in the tetany of hypoparathyroidism from the administration of hydrochloric acid or ammonium chloride. Acid-producing substances are known to liberate calcium from the readily available stores.<sup>16</sup> Recently, Campbell<sup>17</sup> has reported distinct benefit from the use of large doses of hydrochloric acid in two cases of postoperative tetany with achlorhydria. He states that the increase in serum calcium was due in part, at least, to increased absorption from the intestine. No benefit resulted from the use of hydrochloric acid to patient 1, who also had achlorhydria.

Calcium chloride has been recommended because of its twofold effect: a source of calcium and an acid-producing substance. In neither of our patients, how-

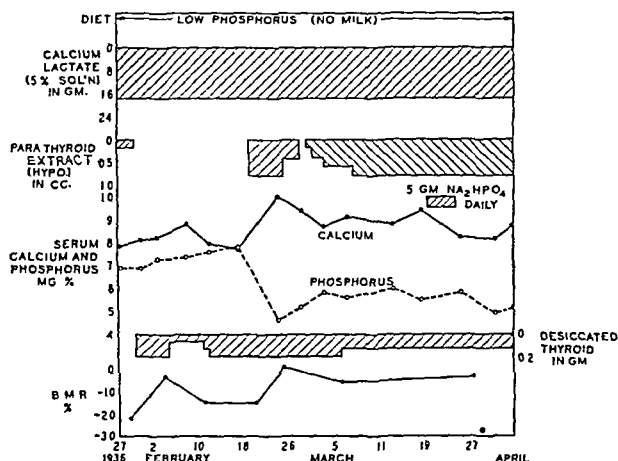


Chart 5.—Serum calcium and phosphorus levels and the basal metabolic rate during the second study of case 2.

ever, was calcium chloride found to be of any advantage over an equivalent amount of calcium lactate, and it is more unpleasant to take.

**Magnesium Salts.**—Wenner<sup>18</sup> found that continuous oral administration of magnesium salts prevented tetany in parathyroidectomized animals. Ellsworth<sup>19</sup> administered magnesium carbonate to a patient with parathyroid tetany without striking benefit. In case 1 there was a rise followed by a fall in serum calcium and a decrease in serum phosphorus during the use of magnesium carbonate. We consider this salt to be of no value.

**Thyroid.**—Thyroid substance and thyroxine have been reported to exert a favorable effect on the disturbed calcium and phosphorus metabolism of hypo-

10. Findley, Thomas, Jr.: Failure of Irradiated Ergosterol to Relieve Parathyroid Tetany, *Ann. Int. Med.* 4: 1144-1153 (March) 1931.

11. Boothby, W. M.: Treatment of Postoperative Parathyroid Insufficiency, *Proc. Staff Meet., Mayo Clin.* 10: 87-91 (Feb. 6) 1935.

12. Boothby, W. M.; Haines, S. F., and Pemberton, J. deJ.: Post-operative Parathyroid Insufficiency, *Am. J. M. Sc.* 151: 81-96 (Jan.) 1931.

13. Stacey, R. S.: Treatment of Low-Calcium Tetany with Calciferol, *Lancet* 2: 656-658 (Sept. 21) 1935.

14. Bauer, Walter; Marble, Alexander, and Clafin, Dorothy: Studies on the Mode of Action of Irradiated Ergosterol in Hypoparathyroidism, *J. Clin. Investigation* 11: 47-62 (Jan.) 1932. Stacey.<sup>15</sup>

15. Aub, J. C.; Albright, Fuller; Bauer, Walter, and Rossmel, Elsie: Studies of Calcium and Phosphorus Metabolism: In Hypoparathyroidism and Chronic Steatorrhea with Tetany, with Special Consideration of the Therapeutic Effect of Thyroid, *J. Clin. Investigation* 11: 211-234 (Jan.) 1932.

16. Farquharson, R. F.; Salter, W. T.; Tibbets, D. M., and Aub, J. C.: Studies in Calcium and Phosphorus Metabolism: The Effect of the Ingestion of Acid-Producing Substances, *J. Clin. Investigation* 10: 221-286 (June) 1931.

17. Campbell, David: The Treatment of Parathyroid Tetany, *Lancet* 1: 369-372 (Feb. 16) 1935.

18. Wenner, W. F.: The Prevention of Tetany by Oral Administration of Magnesium Lactate, *Am. J. Physiol.* 81: 392-404 (July) 1927.

19. Ellsworth, Read: Observations upon a Case of Postoperative Hypoparathyroidism, *Bull. Johns Hopkins Hosp.* 52: 131-144 (Feb.) 1933.

parathyroidism.<sup>15</sup> In case 1, in which the basal metabolism was normal, no benefit was derived from the use of desiccated thyroid. Thyroid substance improved patient 2 by correcting the hypothyroidism that existed, but that this drug was of benefit to the state of hypoparathyroidism is certainly not clearly shown. As a result of these observations we believe that thyroid substance should be used if hypothyroidism exists along with parathyroid tetany but that it is not particularly valuable otherwise.

**Parathyroid Extract.**—The most specific treatment for hypoparathyroidism is parathyroid extract, the use of which is true substitution therapy. Parathyroid extract injected subcutaneously or intramuscularly causes a prompt excretion of phosphorus in the urine and a lowering of the serum phosphorus, followed by an increase in serum calcium and the excretion of this element in the urine. In case 2, from 0.2 to 0.4 cc. of parathyroid extract daily, injected subcutaneously, caused the serum concentrations of calcium and phosphorus to become normal promptly. During the second period of study of this patient larger doses were necessary to maintain favorable serum calcium and phosphorus levels. This may have been due to the fact that viosterol was not being administered at this time.<sup>20</sup>

#### "REFRACTIVENESS" TO PARATHYROID EXTRACT

Unfortunately, the effect of parathyroid extract is completely lost in many persons after a period of continuous use. The subcutaneous and intramuscular injection of parathyroid extract from two different sources (Lilly and Parke, Davis & Co.) was shown to be of no benefit in case 1. This "refractiveness" to parathyroid extract has never been satisfactorily explained. The work of Collip,<sup>21</sup> to whom we are indebted for this therapeutic agent, suggests that refractivity may be due to a high concentration in the blood of a specific principle ("antihormone") having an effect opposite to that of the hormone. This investigator has very convincing evidence that the blood of animals injected chronically with certain pituitary fractions contains antagonistic substances which render these hormones ineffective. The existence of an anti-parathyroid hormone, however, has not been demonstrated.

Although patient 1 was refractive to parathyroid extract injected subcutaneously or intramuscularly, similar amounts of the same preparation injected intravenously caused an immediate outpouring of phosphorus in the urine, an effect shown by Ellsworth<sup>4</sup> to be specific for this hormone. This behavior certainly shows that in refractive states the tissues on which the hormone acts to accomplish its effect are not at fault; on the other hand it shows that the extract, when injected subcutaneously or intramuscularly, does not get to these tissues in a potent state. That the hormone is rendered ineffective by substances in the blood stream appears unlikely, in view of the quantitative response to intravenous injections.

For parathyroid extract to be effective when injected subcutaneously or intramuscularly, it must be absorbed into the blood stream and carried in a potent state to the tissue on which it exerts its effect. If absorption

from the tissues into which the extract is injected is interfered with, there will be a corresponding decrease or absence of effect. This may come about in a manner identical to that observed in the mechanism of local tissue immunity; i. e., with continued use of parathyroid extract, cells of the tissue into which it is injected may unite with hormone (just as cell products unite with antigens) and cause a localization of the hormone at the site of injection, where it is then destroyed. Fixation of the hormone at the site of injection, preventing absorption, would thus result in a state of "refractivity."

The occurrence in case 1 of an inflammatory reaction at the site of subcutaneous injection, much larger, warmer and more tender than resulted from injections of an equal amount of the extract in case 2, lends support to this explanation of the mechanism of "refractiveness."

Even though active when injected intravenously in patients otherwise refractive to parathyroid extract, this route of administration is not advised, because it is not practical and not without danger, as evidenced by our patient.

Many investigators urge that parathyroid extract be used in chronic hypoparathyroid states only for the relief of acute spasms, fearing the development of refractivity. When the disease can be controlled satisfactorily without its use, it would certainly seem wise so to do. The two subjects of this study could be sufficiently controlled without the use of parathyroid extract, so that they were free from tetany and enjoyed an active life. However, the serum calcium and phosphorus were never normal in patient 1, who was "refractive" to parathyroid extract, and in case 2 the concentrations of calcium and phosphorus in the serum were normal only when parathyroid extract was used. It is encouraging to note that the extract was apparently effective in case 1 for more than two and a half years, and in case 2 it was still effective after more than a year of almost continuous use.

#### SUMMARY AND CONCLUSIONS

Data obtained from extensive controlled studies on two patients with chronic postoperative hypoparathyroidism lead to the following statements regarding the treatment of this condition:

1. To compensate most satisfactorily for the altered state of calcium and phosphorus metabolism, the intake of phosphorus should be low and the calcium intake high. This can best be accomplished by feeding a low phosphorus diet (which will also be low in calcium) and large amounts of calcium salt, other than a phosphate. The commonly employed high calcium (milk) diet is undesirable because of its high phosphorus content.
2. A solution of calcium lactate, in amounts sufficient to provide from 1.5 to 2.5 Gm. of calcium daily, is in many respects the best method of administering calcium.
3. Vitamin D in large amounts is of definite value and should be given.
4. Hydrochloric acid and magnesium carbonate, as used, were not beneficial.
5. Thyroid substance should be administered, if hypothyroidism exists. Improvement in calcium and phosphorus metabolism that could be definitely attributed to thyroid medication was not observed.

20. Morgan, A. F., and Garrison, E. A.: Effect of Vitamin D and of Reaction of Diet upon Response to Parathyroid Extract, *J. Biol. Chem.* 85: 687-711 (Feb.) 1930.

21. Collip, J. B.: Recent Studies on Antihormones, *Ann. Int. Med.* 9: 150-162 (Aug.) 1935.

6. Although substitution therapy, consisting of the subcutaneous or intramuscular injection of parathyroid extract, is the most specific treatment, there are serious objections to the long continued use of this extract. If successful management can be accomplished without the use of parathyroid extract, it is advisable not to use it. These studies show that patients with severe chronic hypoparathyroidism can be maintained in a state of good, if not perfect, health by the treatment outlined, without the use of parathyroid extract.<sup>22</sup>

The effectiveness of parathyroid extract when injected intravenously into a patient who had become "immune" to the extract injected subcutaneously suggests that "refractiveness" to parathyroid extract is due to a localization and destruction of the active principle at the site of its injection.

#### ABSTRACT OF DISCUSSION

DR. W. M. KETCHAM, Kansas City, Mo.: I have been interested in parathyroid diseases for the last nine years, during which time I have seen four children with chronic parathyroid deficiency and five adults, all of the adults suffering as the result of a goiter operation. I was impressed with certain facts after watching these patients over a year or two. All of them had a blood calcium ranging from 5 to 7 mg., and all the adults had a cachexia. The adults presented a cachexic state in spite of the fact that they had had goiter operations and that one might have expected myxedema. They were disturbed at night with cramps in their legs, forcing them to get up and walk. They had night sweats, which were drenching. Associated with this was a marked muscular insufficiency, which interfered with their daily work, even mild housework. It was believed at first that these patients would be benefited promptly by the use of calcium, but in the majority of the cases there were no results with calcium glutinate or calcium chloride given by mouth or intravenously. In gastric analysis of four patients an achylia was discovered. Hydrochloric acid was added to the diet but satisfactory results from the administration of both the hydrochloric acid and the calcium were not obtained. Because of the cachectic condition, these patients were placed on large doses of vitamin D, and in all except one good results were obtained when this was combined with hydrochloric acid and calcium. When it was certain that these patients had hydrochloric acid, large doses of vitamin D and fairly large doses of calcium up to from 50 to 75 grains (3.25 to 5 Gm.) daily were given. No better results with the administration of thyroid extract combined with parathyroid extract or the latter alone were obtained than did the authors. In one case no results could be obtained with any treatment and the authors' explanation is probably a correct one. But I have felt that every patient suspected of having parathyroid deficiency should be given calcium, hydrochloric acid and large doses of vitamin D, combined with parathyroid extract both hypodermically and by mouth.

DR. WILLIAM J. KERR, San Francisco: I should like to ask how many international units of viosterol, or vitamin D, were given in these large doses. My reason for asking the question about viosterol is that recently an elderly physician by mistake took 2,300,000 international units of vitamin D daily for eighteen days, when he developed a nausea, anorexia, weakness, increased thirst and polyuria, and then passed into a coma and died. The total quantity of material used was 3 cc. a day. So far as I know, this is the first case of acute poisoning from vitamin D in man resulting in death. There are some chronic cases, but one should be very careful to specify how much vitamin D one is using. The widespread use of highly concentrated doses of irradiated ergosterol is dangerous. It is among the most potent drugs known. It should not be put into the hands of the public and should not be prescribed indiscriminately by physicians.

22. Since these studies were made, we have had occasion to treat two other patients with chronic hypoparathyroidism, in the manner outlined, and the results have been excellent.

DR. R. H. FREYBERG, Ann Arbor, Mich.: I should wish to thank Dr. Ketcham for his discussion. It called to my mind several points. In reviewing the literature of the subject, I was struck with the relatively high incidence of hypoparathyroidism in women, especially in those cases which follow thyroidectomy. All our patients were women. Besides the unfavorable effect of infection on these patients, we have observed an unfavorable effect of menstruating on the calcium metabolism. Our first patient had achlorhydria, and I would point out that we did not measure any benefit to her from quite large amounts of hydrochloric acid, given along with a high calcium diet and no calcium salt. In reply to Dr. Kerr's question, at the beginning of the viosterol therapy we were using a preparation especially prepared for us by the Winthrop Chemical Company, which was ten times more potent than the usual preparation of viosterol. It was, in other words, 2,500 D. We gave amounts of this which were equivalent to from 160,000 to 200,000 U. S. P. units of vitamin D. That is a large dose. Our supply of that medication became exhausted, and throughout the remainder of the treatment we used the standard vitamin D, which was of the potency of 250 D, and we gave from 2 to 4 cc. of this preparation daily (from 20,000 to 40,000 U. S. P. vitamin D units). Since the data were compiled for this communication, we have had opportunity to treat two additional patients with chronic hypoparathyroidism following thyroidectomy, in the manner outlined, with splendid results.

#### STUDIES IN SPLENOPATHY

##### INTRODUCTION

ALLEN O. WHIPPLE, M.D.  
NEW YORK

*This and the following three articles deal with work at the Combined Clinic in Splenopathy of the Vanderbilt Clinic and the Presbyterian Hospital. The members of the staff are Drs. Allen O. Whipple, Kenneth R. McAlpin, William P. Thompson, Louis M. Rousselot, Daniel N. Brown and Robert H. E. Elliott Jr.*

At the Vanderbilt Clinic and the Presbyterian Hospital the splenopathies are studied by a group of physicians and surgeons. Those splenopathies associated with specific blood pictures are studied by the group interested in the anemias and leukemias. The group of splenopathies under consideration is followed by the physicians and surgeons of the Combined Clinic.

The Spleen Clinic is one of several Combined Clinics working at the Vanderbilt Clinic and the Presbyterian Hospital. These Combined Clinics, made up of medical, surgical, pathologic and in some clinics radiologic departments, are engaged in the study of the so-called middle ground diseases. The patients referred to these clinics are studied by the group together, therapy is agreed on and, whether medical or surgical, the results are studied and evaluated by the same group. The workers in these clinics, from whatever department they may be, speak the same language and see eye to eye, and there are no therapeutic or other miracles among friends. There, as in no other clinic, pride and prejudice disappear and an honest integration of opinions and convictions results.

The Combined Spleen Clinic was organized about six years ago. Before 1930 we saw an occasional splenopathy, but in both the medical and the surgical services we were rather complacent about the classification of splenic disease and were rather satisfied with our results. As a result of studying these diseases together

Read at a symposium on diseases of the spleen before the New York Academy of Medicine, April 2, 1936.

in a group made up of members of the medical and surgical staffs we know more about the diagnosis and therapy of some of these lesions but are less certain about others and acknowledge our inability to classify many of the splenopathies and their associated lesions. During the last six years we have had a steadily increasing number of these patients referred to us from the Vanderbilt Clinic as well as from the city and neighboring communities, so that in our files we now have studied and are seeing in our follow up some 200 patients with the lesions classified in the accompanying table.

In our surgical laboratory we have sections of 102 spleens, and the majority of these have been removed since the Spleen Clinic was organized.

From the standpoint of the care of the patient, teaching and research—the three cardinal criteria of any clinic worthy of the name—the Combined Clinic has everything to recommend it. Certainly the patients get more careful study and discriminating opinion as to therapy, because it is the result of agreement among medical and surgical workers, based on mutual follow-up studies. Overconservatism or radicalism in therapy cannot dominate such a clinic.

*Classification of Total Cases Seen in the Spleen Clinic or by More Than One of its Members Since Its Organization Six Years Ago*

Total Cases	200
Disease	Case
Banti's disease	47
Purpura	43
Hemolytic jaundice	46
Unclassified splenomegaly	24
Sickle cell anemia	4
Syphilis of spleen	4
Gaucher's disease	4
Polycythemia	3
Splenomegaly with colitis	2
Schistosomiasis	14
Cooley's anemia	3
Osteosclerotic anemia	1
Lymphosarcoma	1
Unexplained hypochromic anemia	1
Hodgkin's splenomegaly	3

From the standpoint of teaching, one has but to ask our best graduate students, working as residents or fellows, to get a convincing statement that no other place affords such a rare opportunity to study "middle ground" disease in all its phases. In view of the fact that within the next five years astonishing advances will be made in graduate teaching in all large metropolitan centers, as a result of the establishment of qualifying boards in medical specialties, this type of clinic will be in the greatest demand for graduate study and should and will be organized in all large clinics, especially in the university clinics.

Because the Combined Clinic attracts the able graduate student and stimulates inquiry, it is here that research, both clinical and laboratory, naturally develops. As an example of this I would call attention to the fact that it was the unexplained splenomegalies that stimulated this clinic to study experimentally portal bed obstruction and portal bed irritation. Experiments in schistosomiasis in monkeys in Puerto Rico, and in the portal areas of liver and spleen in other species in our surgical laboratory, are at present being studied and will be reported in subsequent communications from this clinic.

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## HEMOLYTIC JAUNDICE

ITS DIAGNOSIS, BEHAVIOR AND TREATMENT: A  
REVIEW OF FORTY-FIVE CASES

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The problem of the accurate diagnosis and subsequent treatment of patients presenting evidence of increased blood destruction with splenomegaly has long been of importance in medical and surgical clinics. Various criteria have been suggested for differentiating the various types of disturbances producing this syndrome, but considerable confusion still exists.

With the hope of obtaining a clearer understanding of the nature of this syndrome, the Spleen Clinic has been conducting a special study during the past six years. This study has resulted in a definite change in our point of view concerning diagnosis, indications for treatment and the therapeutic results that may be expected. Although much of that which follows has been said before, a difference in emphasis will be apparent.

During the past six years the Spleen Clinic has been able to study a total of forty-five patients presenting the clinical picture known as hemolytic jaundice. These cases have all been followed at regular intervals by this combined medical-surgical group; frequent laboratory tests have been made by technicians directly responsible to this clinic; separate records of each patient have been kept in our own files, as well as in the hospital record room; individual patients have been pursued, when pursuit was indicated, by our own social service worker, and nearly all splenectomies have been performed by our chief of clinic, Dr. Allen O. Whipple. With this method of study it has been possible to collect an enormous amount of data over extended periods of time with a degree of accuracy and uniformity difficult to obtain otherwise.

The term hemolytic jaundice has been used as a general diagnosis to include all patients presenting increased hemolysis of red cells within the body coincident with evidence of regeneration. In practice this definition is associated with variable jaundice and splenomegaly.

The Spleen Clinic, after many attempts to classify further the diseases causing this syndrome, has finally thought it wise to accept only two subdivisions. The first of these is a uniform, recognizable, curable entity: typical hemolytic jaundice. The second subdivision consists of a heterogeneous variety of disturbances grouped together under an intentionally vague term—the atypical hemolytic anemias.

### TYPICAL HEMOLYTIC JAUNDICE

Typical hemolytic jaundice is, in our experience, a uniform and readily recognizable disease entity, provided certain diagnostic criteria are rigidly maintained. It is a chronic disease of long duration and of relative mildness. Acute exacerbations may occur, but these acute episodes are not common. The presenting symptom is chronic, variable jaundice and the outstanding physical finding is splenomegaly. A positive diagnosis is made in the laboratory. In all cases of typical hemolytic jaundice the peripheral blood contains the

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spherical microcytes that we believe are as pathognomonic of this disease as are the sickle cells in sickle cell anemia.

We in the Spleen Clinic have had the opportunity of studying thirty cases of this typical disease; of these thirty patients, eighteen have had their spleens removed. The more important clinical and laboratory data are presented in tables 1 and 2.

#### THE ATYPICAL HEMOLYTIC ANEMIAS

In marked contrast to typical hemolytic jaundice is our experience with the atypical hemolytic anemias. In the former group a definite diagnosis is promptly available, knowledge of the disease mechanism is accumulating, and the results of splenectomy can be predicted with security.

The atypical group comprises a total of fifteen cases presenting subacute or chronic acholuric jaundice, anemia with evidence of regeneration and splenomegaly. In all fifteen the possibility of typical hemolytic jaundice was considered, and in all fifteen this diagnosis could not be sustained because the blood failed to show the spherical microcytes with their attendant fragility changes.

In addition, the clinical behavior of this group, while under observation, showed differences from the typical cases, the behavior depending on the type of disturbance responsible for the hemolytic anemia.

Of the fifteen patients, three died with reticulum cell sarcomas of the spleen. These three patients were elderly and the disease progressed relentlessly to a fatal termination. Biopsy of affected superficial lymph nodes revealed the correct diagnosis in one. In the other two a diagnosis of atypical hemolytic anemia was all that could be sustained until autopsy revealed the neoplastic process. This type of hemolytic response to this type of neoplasm has been reported.<sup>1</sup>

Of the fifteen, two patients presented the syndrome of chronic hemolytic anemia in association with a fully positive Wassermann reaction. Treatment of their syphilis was followed by a cessation of the increased hemolytic activity, a regression in the size of the spleen and the amelioration of symptoms. Although hemolytic jaundice due to syphilis has been described, there is no available knowledge whatever concerning the mechanism.

Of the fifteen, one died of extensive caseating tuberculosis of the spleen and lymph nodes. Again the mechanism is not understood.

Of the fifteen, five are being followed at the present time. All five have chronic hemolytic anemia with jaundice, the etiology of which is quite unknown.

Splenectomy was performed in the remaining four. In two, operation resulted in no change in the activity of the hemolytic process. In the other two the hemolytic process progressed and the patients died and came to autopsy. There is nothing uniform in these four cases, they bear no resemblance to one another or to any other cases, and their diagnoses remain entirely obscure.

Details of eleven of this group appear in table 3.

In summary form, our clinical experience with this group of forty-five cases has led to the following tenets:

1. The syndrome of chronic variable acholuric jaundice, chronic variable anemia with regeneration and moderate to marked splenic enlargement, indicates the presence of a hemolytic process within the body.

2. Cases presenting this syndrome may be divided into two major groups:

- (a) Typical hemolytic jaundice.

- (b) The atypical hemolytic anemias.

3. The first symptoms of either group may have their onset at any age and in any race. There is no appreciable sex difference in the incidence.

4. Although a familial background of a similar process is somewhat more common in the typical hemolytic jaundice group, this family history may be present or absent in either group without affecting the diagnosis in any way. The former subdivision of cases into congenital and acquired types is therefore no longer valid.

5. Typical hemolytic jaundice is a clear cut definite disease entity, the diagnosis of which depends on the finding of spherical microcytes, with their attendant fragility changes, in the peripheral blood. Once the active phase of this disease is established it will continue, with fluctuations in intensity, until splenectomy is performed. The splenic pathologic changes are uniform and characteristic. Splenectomy results in an immediate cessation of the increased hemolytic activity with a prompt return of the blood values to normal. These brilliant results have been observed in all cases and persist without exception for as long as sixteen years after splenectomy.

6. The atypical hemolytic anemias comprise a heterogeneous group of disturbances that are associated with increased blood destruction and splenic enlargement. In some of our cases the primary disturbance has been neoplastic, in others infectious, in many unknown. Splenectomy is not indicated, for obvious reasons, in this group.

7. Correct clinical diagnosis before operation is therefore essential.

#### THE NATURE OF TYPICAL HEMOLYTIC JAUNDICE

The clinical study of patients with typical hemolytic jaundice before, during and after operation has led to certain conclusions concerning its behavior. Examination of the accompanying tables will show that there is no uniformity as to sex or racial distribution. The symptoms of chronic anemia with jaundice may appear at any age or an enlarged spleen may be found in an individual being examined for some unrelated complaint. The anemia may be mild or severe, or, in the latent cases, the blood count may be quite normal. The degree of jaundice varies likewise but is always proportional to the degree of anemia. The percentage of reticulocytes also varies within wide limits, depending, again, on the severity of the hemolytic process.

Although so many of the symptoms and signs of this disease appear to be variable, certain other features are uniform and constant. By observing the latter group of changes and by trying to understand their significance we have slowly come to a feeling of relative diagnostic security and confidence. In addition, these studies have helped materially in our understanding of the nature of this disease and how it works.

In every case of typical hemolytic jaundice the peripheral blood smear contains erythrocytes the diameter of which is obviously much less than normal but which in addition show no central pallor. In wet preparations these small cells appear spherical. With the micromanipulator these cells can be slowly and carefully examined and their spherical shape confirmed.

It is important that these cells should be detected and counted in wet film preparations with, when possible, the aid of the micromanipulator. Technics that give

1. Howard, Tasker: *J. Lab. & Clin. Med.* 14: 1157 (Sept.) 1929.

the mean corpuscular volume may be misleading, as these spherical cells form only a small proportion of the total red cell colony, and many of the remaining cells, the reticulocytes, may be considerably larger than normal. In the presence of a high degree of reticulocytosis, mean corpuscular volume readings may be on the high side of normal and the spherical cells remain undetected.

The presence of these spherical cells in the blood of patients with typical hemolytic jaundice has been "discovered" by many observers, including myself. To Naegeli, however, belongs the credit for their original description; he suggested the possibility that these cells were responsible for the altered fragility to hypotonic salt solutions, which is such a constant finding. The work of Vallery-Radot on the relation between red cell

TABLE 1.—Typical Hemolytic Jaundice—Nonsplenectomy \*

Case	Age	Sex	Date	First Blood Count						Microcytes, per Cent	Duration of Jaundice, Years	Spleen	Results
				Hemoglobin, per Cent	Red Blood Cells, Millions	White Blood Cells	Neutrophils, per Cent	Reticulocytes, per Cent	Fragility				
1	56	♀	2/26/22	35	2.8	5,000	77	Increased	0.55	Present	0.5	6 cm. below costal margin	Died 6/3/22, cause unknown
2	8 mo.	♂	3/ 2/23	26	2.4	35,400	22	10.0	0.60	?	6	8 cm. below costal margin	Left against advice
3	50	♂	11/15/29	68	3.2	5,300	59	15.5	0.525	Present	30	Enlarged	Symptoms continue, 53 yrs.
4	25	♀	6/ 8/31	41	3.1	6,700	70	24.0	0.675	33	20	26 cm. below costal margin	Symptoms continue, 25 yrs.
5	18	♀	7/14/31	78	4.1	9,000	66	10.6	0.575	Present	17	2 cm. below costal margin	Symptoms continue, 22 yrs.
6	14	♂	8/ 2/33	55	2.7	6,400	68	12.4	0.625	15	5	1 cm. below costal margin	Symptoms continue, 7 yrs.
7	31	♀	2/ 7/35	90	5.0	7,500	69	11.2	0.60	Present	20	2 cm. below costal margin	Symptoms continue, 20 yrs.
8	57	♀	7/ 3/35	57	3.4	5,000	40	10.9	0.625	11	25	To umbilicus	Symptoms continue, 8 yrs.
9	7	♀	9/25/35	68	4.1	13,200	61	17.8	0.65	7	4	To umbilicus	Symptoms continue, 4 yrs.
10	7	♀	9/25/35	74	3.6	12,200	43	13.6	0.65	9	4	7 cm. below costal margin	Symptoms continue, 4 yrs.
11	9	♀	9/25/35	60	3.3	7,900	51	14.5	0.65	12	5	8 cm. below costal margin	Symptoms continue, 5 yrs.
12	29	♀	9/18/35	85	4.0	8,400	77	12.0	0.65	16	9	9.5 cm. below costal margin	Symptoms continue, 9 yrs.

\* All patients had anemia and were jaundiced.

TABLE 2.—Typical Hemolytic Jaundice—Splenectomy \*

Case	Age	Sex	Date	Hemoglobin, per Cent	Red Blood Cells, Millions	White Blood Cells	Neutrophils, per Cent	Reticulocytes, per Cent	Fragility	Microcytes, per Cent	Duration of Jaundice	Splenectomy	Spleen	Pathology of Spleen	Pathology of Gallbladder	Duration of Follow Up	Results of Operation
13	18	♀	6/21/05	70	3.5	4,500	58	...	...	Many	15 yrs.	4/10/20	Enlarged	Typical	Stones	16 yrs.	Excellent
First blood count			6/21/05	70	3.5	4,500	58	...	...	Many							
Last blood count			3/16/36	104	5.0	...	...	1.1	0.475	13							
14	14	♂	7/11/12	50	2.7	10,000	45	...	0.54	Present	18 yrs.	8/14/22	720 Gm.	Typical	No stones	13 yrs.	Excellent
First blood count			7/11/12	50	2.7	10,000	45	...	0.54	Present							
Last blood count			5/15/35	108	5.7	...	...	2.6	0.625	14							
15	4	♀	11/23/23	70	4.3	13,400	63	6.0	0.60	...	2 yrs.	9/28/25	Enlarged	Typical	?	4 yrs.	Died Aug. 1931, of poliomyelitis
First blood count			11/23/23	70	4.3	13,400	63	6.0	0.60	...							
Last blood count			12/12/29	80	5.2	...	...	...	0.52	...							Died 3 days postoperative
16	35	♂	6/ 2/26	70	3.7	5,400	66	...	0.55	...	5 yrs.	6/ 4/26	1,032 Gm.	Typical	Stones	...	
First blood count			6/ 2/26	70	3.7	5,400	66	...	0.55	...							
Last blood count			...	...	...	...	...	...	...	...							
17	28	♂	11/ 3/29	60	5.1	7,300	63	0.9	0.425	...	15 yrs.	11/ 8/29	675 Gm.	Typical	No stones	5 yrs.	Excellent
First blood count			11/ 3/29	60	5.1	7,300	63	0.9	0.425	...							
Last blood count			...	...	...	...	...	...	...	...							
18	25	♀	9/ 8/24	75	3.8	8,100	74	15.0	0.58	Present	6 yrs.	6/23/25	475 Gm.	Typical	No stones	10 yrs.	Excellent
First blood count			9/ 8/24	75	3.8	8,100	74	15.0	0.58	Present							
Last blood count			4/16/36	94	5.1	...	...	2.1	0.625	12							
19	8	♀	8/ 4/30	65	3.0	8,000	72	9.4	0.525	Present	1 yr.	?/ ?/30	...	...	?	?	Record incomplete
First blood count			8/ 4/30	65	3.0	8,000	72	9.4	0.525	Present							
Last blood count			...	...	...	...	...	...	...	...							
20	45	♀	10/14/30	55	3.6	10,000	78	3.0	0.60	Present	11 yrs.	10/23/30	970 Gm.	Typical	No stones	3.5 yrs.	Died Nov. 1934, carcinoma of rectum
First blood count			10/14/30	55	3.6	10,000	78	3.0	0.60	Present							
Last blood count			2/21/34	85	3.6	...	...	4.3	0.575	Present							Excellent
21	26	♀	4/23/31	42	2.4	8,900	67	15.4	0.575	Many	5 yrs.	6/15/31	1,460 Gm.	Typical	Stones	5 yrs.	
First blood count			4/23/31	42	2.4	8,900	67	15.4	0.575	Many							
Last blood count			5/ 6/36	109	4.9	...	...	2.7	0.525	11							
22	20	♂	3/10/32	98	4.9	...	...	0.6	0.575	Present	19 yrs.	?/ ?/29	...	...	?	3 yrs.	Excellent
First blood count			3/10/32	98	4.9	...	...	0.6	0.575	Present							
Last blood count			...	...	...	...	...	...	...	...							
23	59	♀	2/14/32	40	1.7	7,400	72	15.7	0.55	20	15 yrs.	3/ 1/32	1,435 Gm.	Typical	No stones	10 mos.	Died 3/5/33, multiple sarcomatosis
First blood count			2/14/32	40	1.7	7,400	72	15.7	0.55	20							
Last blood count			6/ 8/32	82	4.7	...	...	4.0	0.525	18	8 mos.	2/ 2/33	265 Gm.	Typical	No stones	3 yrs.	Excellent
24	28	♀	1/13/33	52	2.5	11,000	67	33.6	0.625	17							
First blood count			1/13/33	52	2.5	11,000	67	33.6	0.625	17							
Last blood count			5/ 5/34	...	4.4	...	...	...	...	...	5 yrs.	?/ ?/27	Enlarged	...	?	7 yrs.	Excellent
25	48	♀	7/ 7/25	35	...	...	...	...	...	...							
First blood count			7/ 7/25	35	...	...	...	...	...	...							
Last blood count			3/21/34	96	5.3	...	...	2.7	0.50	8	9 days	3/19/34	750 Gm.	Typical	No stones	1 yr.	Excellent
26	30	♂	3/ 1/34	45	1.5	21,300	76	78.6	0.625	24							
First blood count			3/ 1/34	45	1.5	21,300	76	78.6	0.625	24							
Last blood count			9/19/34	98	4.4	...	...	6.6	0.60	25	10 yrs.	5/25/34	1,000 Gm.	Typical	No stones	1 yr.	Excellent
27	35	♀	7/17/35	85	4.6	...	...	1.7	0.575	16	4 yrs.	6/27/35	600 Gm.	Typical	No stones	6 mos.	Excellent
First blood count			7/17/35	85	4.6	...	...	1.7	0.575	16							
Last blood count			...	...	...	...	...	...	...	...							
28	26	♂	5/13/35	60	4.6	6,300	64	10.7	0.625	9							
First blood count			5/13/35	60	4.6	6,300	64	10.7	0.625	9							
Last blood count			9/ 4/35	103	5.6	...	...	0.9	0.65	5	18 yrs.	12/ 5/35	780 Gm.	Typical	No stones	2 mos.	Excellent
29	28	♀	11/18/35	82	3.7	17,300	79	17.6	0.70	15							
First blood count			11/18/35	82	3.7	17,300	79	17.6	0.70	15							
Last blood count			1/13/36	96	5.0	...	...	0.5	0.65	15	11 yrs.	11/27/35	685 Gm.	Typical	No stones	2 yrs.	Excellent
30	11	♀	11/16/35	70	3.5	12,950	70	21.5	0.475	Present							
First blood count			11/16/35	70	3.5	12,950	70	21.5	0.475	Present							
Last blood count			12/18/35	105	5.1	...	...	7.3	0.575	21							

\* All patients had anemia and were jaundiced.

diameter and fragility to hypotonic salt is of sufficient interest to warrant the presentation again of his table (table 4).

It was not until the recent work of Haden<sup>2</sup> appeared, however, that this relationship between shape, size and hemolysis was conclusively proved. His work leaves no doubt about the fact that these spherical cells are alone responsible for the fragility changes seen in all cases of typical hemolytic jaundice.

In addition, evidence is available to suggest a serious consideration of the importance of these spherical cells in the production of the active disease process.

This chain of evidence, although fragmentary in places, can be presented in order:

1. The fact can be accepted that all patients with typical hemolytic jaundice, as well as their relatives

ary 1933. The patient recovered promptly and has been entirely well since operation. Sections of the spleen are typical of hemolytic jaundice.<sup>3</sup>

At operation the following data were obtained: spherical microcytes in splenic arterial blood, 10.4 per cent; spherical microcytes in splenic vein blood, 8.4 per cent; spherical microcytes in splenic pulp, 48.0 per cent.

A small fragment of spleen is washed carefully in warm physiologic solution of sodium chloride to remove the excess blood. The fragment is then ground in a watch glass with a few drops of the patient's serum, smears are made and the proportion of spherical cells are counted.

4. There is enough evidence, I believe, to warrant the assumption that all the increased red blood cell destruction that results in the active phase of the dis-

TABLE 3.—Atypical Hemolytic Anemia\*

Case	Age	Sex	Date	First Blood Count										Splenectomy	Spleen	Pathology of Spleen	Pathology of Gallbladder	Duration of Follow-Up	Results
				Hemoglobin, per Cent	Red Blood Cells, Millions	White Blood Cells	Neutrophils, per Cent	Reticulocytes, per Cent	Fragility	Microcytes	Duration of Symptoms								
Cases in Which Splenectomy Was Performed																			
31	24	♀	3/ 1/20	50	4.7	6,700	62	1.0	0.55	0	4.5 yrs.	12/ 6/24	397 Gm.	Normal	No stones	15 yrs.	Improved; diagnosis unknown		
32	27	♂	7/31/29	20	0.94	31,200	80	19.0	0.425	0	4 days	10/25/29	540 Gm.	Marked blood formation	Stones	1 yr.	Died 10/4/30; autopsy; acute course partly arrested; diagnosis unknown		
33	63	♂	9/19/31	35	1.3	3,300	78	37.0	0.425	0	4 wks.	10/31/31	680 Gm.	Marked blood formation	No stones	1 mo.	Died 12/5/31; autopsy; splenectomy no help; diagnosis unknown		
34	16	♂	6/23/33	80	3.9	10,000	59	5.7	0.425	0	11 yrs.	6/28/35	540 Gm.	Not typical	No stones	9 mos.	Situation 9 mos. post-operative unchanged		
Cases in Which Splenectomy Was Not Performed*																			
35	55	♀	3/31/26	75	4.3	7,000	65	Not done	0.65	0	1 mo.	None	Palpable	.....	.....	.....	Jaundice disappeared; diagnosis unknown		
36	44	♀	8/ 4/28	15	0.61	10,400	74	25.0	.....	0	6 mos.	None	580 Gm.	Sarcoma	.....	.....	Died 8/6/28; autopsy; sarcoma of spleen		
37	56	♂	9/20/29	35	1.5	7,700	88	6.4	0.425	0	2 mos.	None	1,300 Gm.	Sarcoma	Normal	.....	Died 10/23/29; autopsy; sarcoma of spleen		
38	6	♂	2/14/30	50	3.3	16,400	75	25.0	0.375	0	2 yrs.	None	9 cm. below costal margin	.....	.....	.....	Follow-up appointment not kept		
39	72	♀	1/15/32	48	1.8	6,500	76	27.2	0.425	0	6 mos.	None	820 Gm.	Sarcoma	.....	.....	Died 5/23/35; autopsy; radiotherapy helped for a time; sarcoma of spleen		
40	64	♂	3/ 3/32	64	3.1	3,200	44	10.2	0.45	0	2 yrs.	None	Palpable	.....	.....	.....	Died 7/5/32; apparently cerebral accident; diagnosis unknown		
41	21	♂	4/ 5/33	108	6.1	15,700	74	4.6	0.50	0	4 yrs.	None	3 cm. below costal margin	.....	.....	.....	No change, 1/8/35; diagnosis unknown		

\* All patients had anemia (except patient 41) and all were jaundiced.

with the latent disease, have these spherical microcytes circulating in the peripheral blood. These abnormal cells constitute from 10 to 25 per cent of the total number of erythrocytes, the remaining cells being either reticulocytes or normal red blood cells. We have never observed reticulation in the spherical cells.

2. These spherical cells are directly responsible for the fragility changes to hypotonic salt solution.<sup>2</sup>

3. These spherical cells appear to be selectively removed from the general circulation by the spleen, where they are found in larger numbers than in the peripheral blood.

Sample Observation: A. H., an American woman, aged 28, with chronic anemia and jaundice, had a red blood cell count of 2,500,000; hemoglobin 52 per cent, reticulocytes 33 per cent, and fragility beginning at 0.625 per cent of sodium chloride. The spleen was moderately enlarged. There were no gallstones. Splenectomy was performed by Dr. Whipple in Febru-

ary 1933. The patient recovered promptly and has been entirely well since operation. Sections of the spleen are typical of hemolytic jaundice.

Direct evidence can be procured only by measuring the serum bilirubin concentrations in the blood of the splenic artery and vein at the time of operation. Obvious technical difficulties interfere with the collection of the necessary specimens. In spite of these difficulties we have found that the blood of the splenic vein contains more pigment than does the blood of the splenic artery.

These observations are in accord with the figures obtained by Rich and Rienhoff<sup>4</sup> in an active case of hemolytic jaundice and show that the spleen is actively destroying erythrocytes.

Indirect evidence concerning the activity of the spleen in this disease can be procured by observing the effects

3. Thompson, W. P.: Bull. Johns Hopkins Hosp. 42: 113 (March) 1928.

4. Rich, A. R., and Rienhoff, W. F.: Bull. Johns Hopkins Hosp. 36: 431 (June) 1925.

2. Haden, R. L.: Am. J. M. Sc. 188: 441 (Oct.) 1934.

of splenectomy. Our therapeutic results in the eighteen cases in which splenectomy was performed are uniform and coincide with the results of others. Removal of the spleen is immediately followed by cessation of the increased hemolytic activity. Relief is immediate and, apparently, permanent.

A study of the factors that might be influenced by splenectomy results in the acceptance of only one; the excessive hemolysis stops. I can see no reason to consider any other influence, as the cessation of excessive hemolysis will explain all the changes observed.

With the removal of the site of increased destruction of erythrocytes, the serum bilirubin and the urobilin excretion figures drop promptly to normal levels. The already overactive bone marrow rapidly raises the erythrocyte concentration in the peripheral blood. As the red blood cell count rises, the stimulus for new erythrocytes falls and the proportion of reticulocytes drops. All these changes toward normal appear within a few hours after operation and are concluded in from two to three weeks. We have yet to observe any changes suggesting subsequent increase above normal in erythrocyte destruction. The results of operating appear to be permanent.

The only other theoretically possible effect of splenectomy would be some change in the spherical cells and their fragility. That some such change does occur has been suggested at various times by various authors. Their conclusions are, as a rule, variable, and the changes usually observed are slight shifts in the fragility test.

Our observations warrant the definite conclusions, in the postsplenectomy cases, that the spherical cells persist with their attendant fragility changes for as long after splenectomy as time has permitted observation. The proportion of these typical cells may vary within relatively narrow limits, but they have been demonstrated in patients sixteen years after operation in concentrations as high as 14 per cent.

The recent report of Lord Dawson of Penn<sup>5</sup> of typical fragility changes persisting forty-five years after splenectomy leaves little doubt that the spherical cells are not affected by this surgical procedure.

TABLE 4.—Relation of Red Cell Diameter and Fragility to Hypotonic Salt (Vallery-Radot)

	Diameter of Red Blood Cells in Microns	Hemolysis Begins, per Cent NaCl
Man.....	7.6	0.42
Guinea-pig.....	7.5	0.44
Monkey.....	7.2	0.44
Dog.....	6.6	0.50
Rabbit.....	6.3	0.52
Horse.....	6.2	0.54
Rat.....	6.0	0.54
Cat.....	5.6	0.60
Goat.....	5.3	0.72

What may be termed the life history of this disease can best be presented by a brief review of the records of two of our patients:

These patients are half sisters. Their father, for many years before his death, suffered from chronic anemia and jaundice, as did the grandfather. A diagnosis of hemolytic jaundice was never made but it seems more than likely that they had this disease.

Our two patients had a normal, healthy childhood. In 1898 both became chronically ill with a sallow color and anemia. Many physicians were consulted, various diagnoses were offered, a multitude of medicinal preparations was prescribed and taken but the chronic anemia and jaundice continued.

5. Dawson, B. E.: Brit. M. J. 2: 699 (Oct. 15) 1932.

In 1920, after twenty-two years of this chronic intermittent disorder, the younger sister came to the Presbyterian Hospital because of a recent attack of colic in the right upper quadrant. A diagnosis of cholelithiasis was made and operation advised. April 10 a gallbladder containing stones was removed. At the same time the spleen was taken out. Convalescence was stormy but the patient survived. Histologic study on sections of the spleen is recorded as being compatible with hemolytic jaundice—the patient's clinical diagnosis is recorded at the time she left the hospital as chronic cholelithiasis and splenic anemia. She then disappeared from medical observation, the disappearance being due not only to the fact that no further attacks of colic were experienced but also because the chronic jaundice vanished.

TABLE 5.—Respective Blood Studies in Half Sisters

	F. L.	A. L.
Red blood cells.....	5,000,000	3,000,000
Hemoglobin.....	104% (Sahli)	70% (Sahli)
White blood cells.....	9,600	6,900
Polymorphonuclears.....	53%	76%
".....	1.1%	20.4%
".....	13%	20%
".....	0.475% NaCl	0.525% NaCl
".....	Very faint trace	3.6 mg. per 100 cc.

Fifteen years later we were reviewing the sections of spleen collected by the Department of Surgical Pathology. Although the sections were old and faded, one glance at the spleen of this patient warranted the diagnosis of typical hemolytic jaundice. The patient and her sister were pursued and their clinical pictures brought up to date.

There is no question that both these patients have typical hemolytic jaundice. Spherical microcytes are present in the peripheral blood of both, and the response of their blood to hypotonic salt solutions is similar and typical. In one, splenectomy resulted in a cessation of excessive erythrocyte destruction. In the other this excessive destruction with its attendant jaundice and anemia continues now into its thirty-eighth consecutive year. Their respective blood studies at the present time are given in table 5.

It would seem that there was little doubt but that these two patients inherited the spherical microcytes from their father. The hemolytic jaundice became active in the two at approximately the same time and continued in one until splenectomy twenty-two years later and in the other to the present time, thirty-eight years after the onset.

The blood of the two patients contains spherical microcytes in approximately the same proportions. As far as one can see, the only difference between these two patients is the spleen. In one the active phase of the disease ceased with splenectomy sixteen years ago; in the other the active phase continues.

This evidence, I feel, warrants the conclusions that, given the inherited spherical microcytes and increased hemolytic activity, one has the disease known as typical hemolytic jaundice and that this disease, once active, remains active until the site of increased hemolytic activity is removed.

Three important unsolved questions remain:

1. Little or nothing is known about the genetics of transmission of these spherical cells.

2. Little or nothing is known about the factors that initiate the excessive hemolysis which signals the onset of the active disease. It is known that individuals exist, as members of hemolytic jaundice families, whose blood contains these spherical cells and in whom increased hemolysis is not taking place. We also know that these latent cases may become active at any time in their career from, in our series, the age of 6 weeks to the age of 58 years. We also know that, when the disease once becomes active, spontaneous remission will not occur and that chronic anemia with jaundice will

persist until splenectomy. But we have not been able to associate the change from latency to activity with any as yet discernible event. Occasionally an acute infection precedes the onset of jaundice; in the majority of cases no such history can be elicited.

3. We do not know whether a normal spleen interposed in a circulation containing spherical erythrocytes would behave as and assume the histologic characteristics of a spleen presenting hemolytic jaundice.

#### CONCLUSIONS

1. Hemolytic anemia with jaundice and splenomegaly has been observed in forty-five patients.

2. This syndrome may be separated into two groups:

(a) Typical hemolytic jaundice.

(b) Atypical hemolytic anemia.

3. Typical hemolytic jaundice is a clear cut definite disease entity the course of which can be predicted and the mechanism of which is beginning to be understood.

4. The atypical hemolytic anemias comprise a heterogeneous group of conditions in which there is increased red cell destruction.

5. The symptoms of typical hemolytic jaundice are promptly, completely and permanently relieved by splenectomy. The atypical hemolytic anemias have not been benefited by this procedure.

6. Accurate preoperative diagnosis is of great importance.

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## THE RESULTS OF SPLENECTOMY IN THROMBOCYTOPENIC PURPURA

A COMPARATIVE STUDY OF TEN CASES IN  
WHICH SPLENECTOMY WAS PERFORMED  
AND ELEVEN CASES TREATED BY  
CONSERVATIVE METHODS

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Two centuries have elapsed since Werlhof originally described a case of purpura haemorrhagica, but the advances made in our knowledge of the disease have all occurred in the past fifty years. Its clinical manifestations remain as he so vividly described them, though little is known, even today, about the mechanism of their production. Its characteristic blood picture has become familiar. It is well known that many cases are closely associated with the factor of infection, that some are caused by toxic agents and that others occur in the course of diseases affecting the hematopoietic and reticulo-endothelial systems. Some of these cases can be treated effectively. There is, however, a group of cases in which the etiology remains entirely obscure. Strangely enough, it is this group that can be treated with the greatest assurance of success.

For many centuries, physicians have recognized the existence of hemorrhagic diseases. It was not until 200 years ago, however, that purpura haemorrhagica emerged from this group as a clinical entity. The disease was first described in 1735 by one of the greatest physicians of the eighteenth century, Paul Gottlieb

Werlhof.<sup>1</sup> During the following century and a half no important contribution was made to the knowledge of the disease, and it remained in comparative obscurity. In 1887 an observation of great importance was made by Denys,<sup>2</sup> a Belgian histologist. He pointed out an almost complete absence of platelets in blood smears of some patients with purpura. Two years later Hayem<sup>3</sup> called attention to this finding and in 1891<sup>4</sup> reported two cases of purpura presenting low platelets and poor clot retractility—the latter being an observation which was apparently original with him. Four years later he<sup>5</sup> wrote "The two constant and pathognomonic characteristics are the rarity of hematoblasts and the absence of transudation of serum after the coagulation of the blood" (*les deux caractères constants et pathognomoniques sont donc la rareté des hématoblastes et l'absence de transsudation du sérum après la coagulation du sang*). In 1909 Pagniez<sup>6</sup> demonstrated a connection between clot retraction and the number of platelets, and in the following year Duke<sup>7</sup> described the method still in use for the estimation of bleeding time and reported two cases of purpura in which the bleeding time was prolonged. The next landmark in the history of the disease came in 1916 when, at Kaznelson's suggestion,<sup>8</sup> Professor Schloffer of Prague performed the first splenectomy in a case of purpura haemorrhagica. The dramatic results of this operation were reported in the same year by Kaznelson.<sup>9</sup> This report stimulated renewed interest in purpura and much has been written on the subject since. The results of splenectomy have received considerable attention and the operation, though still resting on an empirical basis, has become firmly entrenched as the most effective form of therapy in certain cases.

Since Kaznelson's paper in 1916, many excellent reports on the results of splenectomy in thrombocytopenic purpura have come from European and American clinics. In 1926 Whipple<sup>10</sup> reviewed eighty-one cases, including three of his own. The operative mortality in this group was 16 per cent. Two years later Spence<sup>11</sup> was able to add twenty-three more cases,<sup>12</sup> bringing the total number of reports published in the two groups to 104. In the following year Quénu<sup>13</sup> collected a number of additional cases and found an operative mortality of 16 per cent for the entire series of 122 cases. In 1932 Eliason<sup>14</sup> summarized the situation to date, giving

1. Werlhof, P. G.: *Opera Medica* (collegit et auxit, J. E. Wichmann, Hanover, 1775); *Excerpta e Commercio Norico*, 1731-1745, p. 748. The disease is still referred to frequently, especially on the continent, as *morbus maculosus Werlhofii*.

2. Denys, J.: *Etudes sur la coagulation du sang*, *Cellule* 3:445, 1887. The priority of this observation has been contested by Minkowski, who stated that it was made by Brohm in 1883.

3. Hayem, G.: *Du sang et de ses altérations anatomiques*, Paris, 1889, p. 970.

4. Hayem, G.: *Sur un cas de diathèse hémorrhagique*, *Bull. et mém. Soc. méd. d. hôp. de Paris* 8:389-394 (July 17) 1891.

5. Hayem, G.: *Du purpura*, *Presse méd.* 3:234, 1895.

6. Pagniez, P.: *Aperçu sur l'état actuel de la question des plaquettes sanguines*, *Arch. d. mal. du cœur* 2:18, 1909.

7. Duke, W. W.: *The Relation of Blood Platelets to Hemorrhagic Disease*, *J. A. M. A.* 55:1185 (Oct. 1) 1910.

8. Whipple<sup>10</sup> called attention to a personal communication from Dr. E. W. Peterson informing him that splenectomy was suggested for a case of purpura in 1915 by Dr. Alfred Hess of New York.

9. Kaznelson, P.: *Verschwinden der hämorrhagischen Diathese bei einem Falle von "essentieller Thrombopenie"* (Frank) nach Milzexstirpation: *Splenogene thrombotische Purpura*, *Wien. klin. Wchnschr.* 20:1451-1454 (Nov.) 1916.

10. Whipple, A. O.: *Splenectomy as a Therapeutic Measure in Thrombocytopenic Purpura Haemorrhagica*, *Surg., Gynec. & Obst.* 42:329-341 (March) 1926.

11. Spence, A. W.: *The Results of Splenectomy for Purpura Haemorrhagica*, *Brit. J. Surg.* 15:466-499 (Jan.) 1928.

12. Spence included reports of 101 cases in his series. However, he did not include four of Whipple's cases and, as pointed out by Eliason, Farley's patient was the same as Lee's. Therefore, he actually added twenty-three new cases to the eighty-one collected by Whipple.

13. Quénu, J.: *Les résultats de la splénectomie dans le purpura hémorrhagique*, *Rev. de chir.* 67:24-39, 1929.

14. Eliason, E. L., and Ferguson, L. K.: *Splenectomy in Purpura Haemorrhagica*, *Ann. Surg.* 96:801-829 (Nov.) 1932.

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Owing to lack of space, this article has been abbreviated for publication in *THE JOURNAL* by the omission of a number of case reports. The complete article appears in the authors' reprints.

figures on 213 collected cases, five of which were his own. The results of splenectomy in this group were excellent. Cures were reported in 73 per cent and improvement in an additional 8 per cent; i. e., 81 per cent of the patients were benefited by the operation. The operative mortality was 13 per cent for the entire group but only 7 per cent in the 113 cases reported between 1928 and 1932. Of the 156 cases reported as cured, only five had been followed for five or more years. In the same year Giffin<sup>15</sup> published the results in forty-four cases in which splenectomy was done at the Mayo Clinic. The operative mortality was 7 per cent. However, twenty splenectomies were performed for purpura between March 7, 1923, and Jan. 1, 1927, without a single operative mortality. One patient died of a recurrence of the disease five years after operation. The remaining nineteen patients were alive and had suffered no serious hemorrhagic manifestations in a follow-up period of from five to nine years. In 1934 Pemberton<sup>16</sup> reported thirteen more cases from the Mayo Clinic, bringing their total to fifty-seven cases, the largest series so far published from any single clinic. Four patients died while still in the hospital, giving a figure for operative mortality of 7 per cent for the whole group, or the same as that quoted by Giffin for their first forty-four cases. Permanent remission of the disease was achieved in 63 per cent of the patients who survived; an additional 35 per cent were improved, and in only one case did the disease recur in acute form.

Ever since the introduction of splenectomy in the treatment of thrombocytopenic purpura, surgeons have attempted to divide the disease into acute and chronic types. This has resulted in considerable confusion, as many of them have not defined the terms "acute" and "chronic." It is apparent that some surgeons include all fulminating cases in their acute group, regardless of the duration of the disease, thus including chronic cases in acute exacerbations. This has naturally led to inaccuracies in the results published for both groups. Nevertheless, it is only fair to point out that, if anything, this would tend to decrease the mortality for the chronic group without materially affecting the mortality for the acute group.

Until comparatively recently it was felt by most surgeons that splenectomy was definitely contraindicated in acute cases. Whipple (1926) reported seven deaths in eight cases of acute purpura, and Spence (1928) found ten deaths in twelve cases. Eliason (1932) gave an operative mortality of 34.3 per cent for the thirty-five acute cases in his series but called attention to a drop to 13.6 per cent in the twenty-two splenectomized between 1928 and 1932. At present the available figures indicate an operative mortality of about 7 per cent for all cases of thrombocytopenic purpura, that for the acute cases being in the vicinity of from 13 to 14 per cent and for the chronic cases from 5 to 6 per cent.

It is apparent from these figures that factors have come into play in recent years which have strikingly reduced the mortality from splenectomy. These factors are probably:

1. More accurate diagnosis.
2. Better preoperative preparation of the patient.
3. Advances in surgical technic and a more careful choice of the anesthetic.

15. Giffin, H. Z.: Problems Associated with the Treatment of Essential Thrombocytopenic Purpura; Notes on Forty-Four Cases in Which Splenectomy Was Performed, *Tr. A. M. Physicians* 47: 218-227, 1932.  
16. Pemberton, J. deJ.: The Diagnosis and Treatment of Purpura Haemorrhagica, *Am. J. Surg.* 24: 793-806 (June) 1934.

The operative mortality will probably always be higher in fulminating cases, irrespective of the duration of the disease, since the patients are in a more serious condition when they come to operation. It also seems likely that it will always be higher in the incipient group, as correct diagnosis is often impossible in these cases, the purpura and thrombocytopenia frequently being merely manifestations of some underlying disease which only subsequent events will reveal in its true colors. It is, however, no longer so high that it can be considered a contraindication to a measure which, when performed by an experienced surgeon in selected cases carefully prepared for operation, may be the means of saving life.

#### MATERIAL

It is our purpose in this paper to present twenty-one cases of so-called idiopathic thrombocytopenic purpura studied in this clinic in the past sixteen years.<sup>17</sup> This group includes all cases adequately enough worked up and sufficiently followed to establish the diagnosis beyond reasonable question. In ten of these patients splenectomy has been done. They have been followed for an average period of five and one-half years, (five of them for over six years)—the longest follow up being eleven years and the shortest eleven months. The eleven nonsurgical cases are presented as a control group. They have been followed for an average period of four years (six of them for over three and a half years)—the longest follow up being eleven years and the shortest one month. We have appended the reports of two cases not included in this group to illustrate the criteria used in the selection of cases.

#### REPORT OF CASES

CASE 1.—History.—A. V. V., an American born schoolboy, aged 12 years, was admitted to the hospital in July 1920 for purpura of the skin, epistaxis and bleeding gums of four days' duration. The family history showed no "bleeders." The past history was essentially negative. The diet was adequate in every respect. On physical examination the boy was healthy looking, with skin speckled with fine purpuric spots and ecchymotic areas. The eyes and ears were normal. The nose contained dry crusts of blood. The condition of the teeth was fair; the gums were oozing. The tonsils were large and cryptic but apparently not infected. There were moderately enlarged lymph glands in both axillae but nowhere else. The spleen was not palpable, and there were no other significant changes.

Laboratory Examination.—Examination of the blood revealed: red blood cells 3,200,000, hemoglobin not recorded, white blood cells 12,200 with a normal differential count, bleeding time 5 minutes, clotting time 25 minutes, clot retraction prolonged, platelets not counted. The urine showed many red blood cells; a stool guaiac test for occult blood was strongly positive.

Course.—About one week after admission the patient was given a transfusion of 350 cc. of citrated blood. Following this he seemed definitely better and all bleeding stopped; red blood cells rose to 4,100,000 with a hemoglobin of 84 per cent (Sahli), bleeding time dropped to 2 minutes, clotting time to 6 minutes, the clot retracted normally and no more blood was found in the urine or stool. The patient was discharged after two weeks in the hospital and for the next eight months was followed closely in the clinic. A month after discharge, mild purpuric symptoms recurred and persisted for a short time. He then passed through a period of several months when he was free from all bleeding but in March 1921 had to be readmitted with a fairly severe recurrence.

On this admission the physical examination was essentially as reported previously, except that his teeth had been cleaned up and were in excellent condition. The red and white cell counts and the hemoglobin were all within normal limits; the platelets were 20,000. He was tried out on an emulsion of turpentine

17. Because of lack of space this paper is abbreviated in THE JOURNAL by the inclusion of reports of only six cases. The entire series will be found in the authors' reprints.

and acacia (10 minims [0.6 cc.] three times a day) and also received four transfusions, to which he was slow in responding. After two months he was discharged with all bleeding stopped, but the platelets numbered only 5,000. For the next three and one-half years his course, as followed in the outpatient department, was relatively benign and, though the platelet count never rose over 95,000, he remained practically free from bleeding. In October 1924, however, he again had an acute flare up requiring admission.

On this occasion the platelets numbered 20,000, bleeding time  $3\frac{1}{2}$  minutes, clotting time 7 minutes. He remained in the hospital eight weeks and showed slow but steady improvement. After leaving the hospital he failed to maintain his improvement and was readmitted for splenectomy three weeks after discharge. At this time, however, his bleeding was minimal; the platelets were too few to count accurately. Operation was performed by Dr. Allen O. Whipple on December 27, being preceded by a transfusion of whole blood. The postoperative course was uneventful. Platelets rose abruptly on the third day after operation to 180,000; bleeding time dropped to 2 minutes and all gross bleeding ceased. The platelet rise, however, was not maintained; and, though the patient had no further symptoms save an occasional purpuric spot on the skin, the count on discharge, three weeks later, had dropped back to 10,000.

For a time it seemed as though the disease had been permanently arrested, for the patient was free from all bleeding for the next eight months. Toward the end of the first year after operation, however, he had two colds and broke out with mild bleeding manifestations with each. The platelet count never went above 80,000, and eighteen months after splenectomy he was admitted for the fifth time in a fulminating flare up of the disease. Despite two transfusions and the administration of blood-coagulants, he died of a cerebral hemorrhage four days after admission. Permission for a postmortem examination, unfortunately, could not be obtained.

**Summary.**—A case of severe chronic thrombocytopenic purpura in an adolescent boy was followed through its entire duration of six years. Splenectomy was performed during a relatively quiescent phase of the disease without material benefit. The most outstanding characteristic of the case was its susceptibility to severe exacerbations, of which there were four, the last ending fatally.

**CASE 5.—History.**—M. M., a Russian-Jewish schoolboy, aged 13 years, first admitted to this hospital in August 1928, gave an eight year history of frequent epistaxis and easy bruising. There were no "bleeders" in his family and the past history was essentially negative. On physical examination he appeared chronically ill but aside from petechiae, ecchymosis, a spleen that was felt with difficulty, and a positive tourniquet test there were no other significant physical changes. A laboratory work up showed: hemoglobin 65 per cent; red blood cells 3,700,000; white blood cells 8,700, with a normal differential count; platelets 6,000; bleeding time 10 minutes; clotting time 3 minutes; clot retraction poor; urine negative for red blood cells; stool guaiac test strongly positive. After a thorough search for foci of infection had been made with negative results it was decided that he had "idiopathic" thrombocytopenic purpura and that the spleen should be removed.

**Course.**—August 20 a splenectomy, followed by transfusion, was performed by Dr. F. B. St. John. Following operation his course was very smooth and he had a splendid platelet rise. On the third postoperative day the platelets were 210,000 and on the ninth postoperative day they were 360,000. By his sixteenth day the bleeding time had fallen to  $1\frac{1}{2}$  minutes and since then the platelets have never been below 175,000 nor his bleeding time above the figure just given. Interestingly enough, though the bleeding time has always been within normal limits, the clot retraction has remained prolonged. He is recorded to have had a slight epistaxis about six weeks after splenectomy and another twenty months later, but there have been no other episodes of bleeding. A noteworthy feature of this case was the patient's leukocyte response to what appears to have been an acute pharyngitis and tonsillitis, which occurred three weeks after operation. This response consisted of a marked lymphocytosis, reaching as high as 81 per cent in a total white cell count of 21,000. A relative lymphocytosis was reported as late as May 1930, but there has been no reason to believe that the patient has a lymphatic leukemia. He was last seen in the Spleen Clinic in February 1936 and at that time was in perfect

health with no clinical evidence or history of bleeding. The blood values were all well within normal limits, with the exception of the clot retraction, which was still prolonged; the capillary resistance, as measured by the Dalldorf apparatus, was 40.

**Summary.**—In a case of moderately severe chronic thrombocytopenic purpura a seven and one-half year follow up has revealed no convincing evidence of a recurrence of the disease following splenectomy—a dramatic result thus far.

**CASE 9.—History.**—G. S., an American-born schoolgirl, aged 15, admitted to the hospital in April 1933, complained of easy bruising and profuse epistaxis for the previous seven years and vaginal bleeding for the previous six months. Her mother had pernicious anemia, which was being controlled with liver therapy. The patient had always eaten a well balanced diet. She was said to have had rheumatic fever and chorea eight years previously. The bleeding tendency had started following a tonsillectomy and had subsequently become sufficiently severe to require five admissions to another hospital. All efforts at conservative therapy (including repeated transfusions and a course of x-ray treatments to the spleen) had failed to alter the course of the disease more than temporarily. On physical examination the patient was markedly exsanguinated with extreme pallor, rapid, thready pulse and cold extremities. The skin was clear. The eyes, ears, nose and throat were all normal. The teeth were all excellent. The spleen was not palpable. There was profuse bleeding from the vagina. The remainder of the examination was not noteworthy.

**Blood Studies.**—Hemoglobin was 32 per cent, red blood cells 2,200,000, white blood cells 5,700, with a normal differential count, platelets 15,000, bleeding time 4 minutes, clotting time  $5\frac{1}{2}$  minutes and clot retraction not reported.

**Course.**—Immediate operation was deemed advisable and the patient's spleen was removed by Dr. Allen O. Whipple on the day following admission. During the operative procedure the patient had a sudden, very profuse epistaxis which made it seem doubtful at the time whether she would leave the operating table alive. Her condition, however, was improved markedly by transfusion and other supportive measures and by the second postoperative day the platelets had risen to 356,000. On the third day after operation all bleeding ceased, and on the sixth day the platelets spiked to a high of 1,025,000, but during the next ten days they dropped back to 111,000. She left the hospital three weeks after operation, having had a smooth postoperative course, and on discharge the hemoglobin was 70 per cent, red blood cells 4,100,000, platelets 134,000. During her subsequent follow up she has had no recurrence of purpuric manifestations and the platelets have remained at or above 129,000. She has recently had two nosebleeds, however, which, in the opinion of a consulting otolaryngologist, are a purely local phenomenon and are not connected with the patient's general condition. The most recent bleeding time was  $2\frac{1}{2}$  minutes.

**Summary.**—In a case of severe chronic thrombocytopenic purpura, splenectomy was performed as a life-saving measure during an exsanguinating exacerbation of the bleeding tendency. As far as one can judge from a two and one-half year follow up, the disease is cured.

**CASE 13.—History.**—R. V., a Russian-Jewish housewife, aged 40, admitted to the hospital May 5, 1921, complained of bleeding from the vagina, nose and gums and into the skin for the previous three months. There were no bleeders in the family. The patient had always been healthy until the onset of her illness. Her periods had been regular and not excessive until three months prior to admission, when she began to have menorrhagia. Her last period had started eighteen days previous to entering the hospital and she was still bleeding profusely on admission. On examination the patient was obviously anemic and very weak. Scattered over the trunk and extremities were many old and new purpuric spots of various sizes. Two retinal hemorrhages were present in the left eye. The ears and throat were normal. The nose contained several crusts of dried blood. The teeth were in poor condition and the gums were oozing freely. The spleen was not felt. The patient was bleeding profusely from the vagina. There were no other abnormal changes.

**Laboratory Examination.**—Hemoglobin was 28 per cent (Sahli), red blood cells, 2,700,000, white blood cells, 17,500 with

polymorphonuclears 79 per cent, platelets too few to count, bleeding time 36 minutes, clotting time 5 minutes. The urine contained many red blood cells; stool guaiac test was negative.

*Course.*—The patient was given an immediate transfusion of citrated blood and the vagina was packed tightly. For the first month she continued to bleed profusely from the uterus despite packing and eight transfusions. Her teeth were attended to, and various forms of therapy were tried, such as intracutaneous injections of old tuberculin and oral administrations of turpentine, but the bleeding, particularly from the vagina, continued unabated. Finally, radium was applied to the interior of the uterus to produce an artificial menopause, and shortly thereafter all vaginal hemorrhage stopped. The patient received two more transfusions, making ten in all, but within a short period of time many bilateral retinal hemorrhages developed, producing partial blindness. Toward the end of the second month, however, the bleeding manifestations became milder and the platelet count finally rose to 30,000. She was discharged three and one-half months after admission, apparently free from bleeding, with normal red and white counts, normal hemoglobin and a platelet count of about 70,000. Unfortunately the patient returned immediately to her home in Texas. In 1932 (eleven years later) she reported by letter that she had completely recovered her vision and that she had been in perfect health since leaving the hospital, except for occasional purpuric spots on the skin.

*Summary.*—A case of severe incipient thrombocytopenic purpura in a middle aged woman, characterized at the onset by intractable uterine bleeding, was apparently controlled by radium sterilization. The disease has since become mild and chronic. The total follow up has been eleven years.

*CASE 15.—History.*—M. G., an Irish-American schoolgirl, aged 11 years, admitted to the hospital March 10, 1929, complained of a brown skin rash and bleeding from the mouth and nose of three weeks' duration. The mother and a paternal aunt bruised easily; otherwise there was no history of bleeding in the family. Tonsillectomy had been done seven years before. For the previous six months the mother had noted that the patient bruised easily. Present illness: In addition to the sudden onset of skin rash, epistaxis and bleeding gums, the child had been nauseated on several occasions within the previous three weeks, and her appetite was failing. On examination the patient was well nourished and well developed and did not appear ill. There were numerous small purpuric spots scattered over the entire body, with several large ecchymotic areas on both lower extremities. The eyes and ears were normal. The nose showed evidence of recent epistaxis. The teeth were excellent, the tonsils were out and the throat was entirely normal. The spleen was not palpable. Examination was otherwise negative except for slight enlargement of cervical lymph nodes and a positive tourniquet test.

*Laboratory Examination.*—Hemoglobin was 70 per cent, red blood cells 3,400,000, white blood cells 9,500 with a normal differential count, platelets 35,000, bleeding time 28½ minutes on one occasion and over an hour on another. Clotting time was 3 minutes, clot retraction was normal once and "fair" a second time. Roentgenograms of the sinuses were negative. The urine contained a few red blood cells.

*Course.*—The child was observed in the hospital for three weeks and received one small transfusion just before discharge. The platelets hovered between 35,000 and 40,000, and she continued to have mild bleeding manifestations throughout her stay. Splenectomy was considered, but her symptoms were not deemed severe enough to warrant operation, and she was discharged to the care of her local physician to be readmitted for immediate operation if the disease showed any increase in severity. Two days after discharge she began to bleed profusely from the gums and urinary tract. These symptoms persisted and three days later a slight speech difficulty was noted. The seventh day after leaving the hospital she began vomiting blood, became stuporous and was rushed back to the hospital, where she died forty minutes after admission from obvious cerebral hemorrhage. At necropsy, massive subdural, sub-arachnoid and cerebellar hemorrhages, both old and new, were found. In addition, extravasations of blood were found in the majority of the abdominal organs. There were no other significant changes.

*Summary.*—A deceptive, moderately severe incipient case of thrombocytopenic purpura occurred in an 11 year old child. The disease suddenly became fulminating and terminated fatally seven months after onset. This case illustrates how treacherous the disease can be.

*CASE 20.—History.*—B. S., a Russian-Jewish housewife, aged 51, first seen in the outpatient department Jan. 1, 1933, gave a history of intermittent bleeding into the skin and from the nose since the age of 12, and of profuse menorrhagia since the onset of the menses. She had had fairly severe postpartum hemorrhages after three deliveries. In addition, she stated that she had gone through an episode of headache, syncope and transient blindness in the left eye accompanied by hematemesis and melena one and one-half years previously. Two years prior to being seen in the clinic, splenectomy had been offered by another hospital. Operation was refused and high voltage roentgen therapy to the spleen had been substituted in its stead. The latter had resulted in a mild exacerbation of the bleeding tendency and the onset of an artificial menopause. There was no history of blood dyscrasia in the family. On examination the patient was obese, and did not appear ill. Her skin was speckled with a fine purpuric rash, and several large areas of subcutaneous ecchymosis were also noted. The ears, nose and throat were negative. The teeth were considered only "fair." The remainder of the physical examination was irrelevant. The spleen was not felt.

*Laboratory Examination.*—The blood readings were as follows: Hemoglobin 88 per cent, red blood cells 5,400,000, white blood cells 6,900, polymorphonuclears 72 per cent, platelets 8,000, bleeding time 4½ minutes, clotting time 2¾ minutes, tourniquet test positive.

*Course.*—The patient refused to consider splenectomy and also refused to enter the hospital for observation and transfusion. She was followed closely in the hematology clinic for a period of about six months and was then lost sight of for a year and a half. During the latter period she had a hemorrhage into the right eye, which cleared up uneventfully. On her last visit, in February 1935, she was improved and the platelets numbered 18,000, the highest they had ever been while she was under observation in this clinic. The bleeding time on this and on one prior occasion was slightly over 10 minutes.

*Summary.*—A case of moderately severe chronic thrombocytopenic purpura of over forty years' duration was followed in this clinic for a period of twenty-four months and then lost sight of. Splenectomy was obviously indicated but repeatedly refused. Interesting features of the case were its extremely long duration and the fact that, though on at least two occasions the disease became severe enough to produce ocular and cerebral symptoms, there were no permanent residua.

The cases all belong to the group of thrombocytopenic purpuras commonly referred to as "idiopathic" or "essential."<sup>18</sup> They have been selected because in no instance was an obvious causative factor involved and in no instance did the purpura occur in the course of some other disease affecting the hematopoietic or reticulo-endothelial systems. As far as possible we have excluded all cases in which an associated infection might reasonably be considered responsible for the purpura. The exaction of such a rigid standard in the choice of material has naturally resulted in the omission of several cases that would ordinarily be considered acceptable in this group (i. e., cases 11 and 12). We believe, however, that a fairer appraisal of the results of treatment can be made when such a standard is adhered to.

In classifying our cases we have followed the outline proposed by Giffin in 1932. This divides the group into (1) chronic cases and (2) incipient cases in their primary attack, irrespective of the exact duration of the disease. The cases have been further subdivided by characterizing them as mild, moderate or severe.

18. We feel very strongly that these terms should be discarded, as it is misleading to imply the absence of a causative factor merely because one is ignorant of its nature.

## AGE AT ONSET, SEX, NATIONALITY AND RACE

Of the twenty-one cases here presented in the control and operative groups 76.2 per cent, or slightly more than three fourths, became manifest before the fourth decade. There were seven in the first decade, five in the second, four in the third, two in the fourth and three in the fifth. The disease was more than four times as prevalent among females as among males, the exact ratio of distribution between the sexes being seventeen to four. In this connection it is of interest to note that six of the seven patients in whom the onset took place during the first decade were females. This finding is noteworthy in that in their paper on purpura in childhood, McLean, Kreidel and Caffey<sup>19</sup> found that the

to the hospital or first observation in the outpatient department. Skin purpura was present in all but two cases on the first examination. Bleeding into or from the mucous membranes was present in eleven instances. Gross or microscopic hematuria was recorded in only six cases. In only one was there frank bleeding from the bowel. In four others the guaiac test of the stool was reported as positive, but in three of these it could have been due to swallowed blood. Retinal hemorrhages were noted in two cases and vitreous hemorrhage was noted in one. In eight of the twenty-one cases the spleen was recorded as palpable on the initial examination; one of these cases was incipient, the disease having been present according to the history for

TABLE 1.—Initial Blood Picture and Severity on Admission in Group in Which Operation Was Performed

Case	Severity	Platelets	Bleeding Time	Clotting Time	Clot Retraction	Tourniquet Test	Hemoglobin (% Sahli)	Red Blood Cells in Millions	White Blood Cells in Thousands	Poly-morpho-nuclears	Lym-phocytes	Other Cells*
1	Moderate	Not counted†	5' †	25' †	Prolonged	Not done	Not done	3.2	12.2	55	27	18
2	Moderate	Too few to count	9'	8'	Prolonged	Not done	75	4.1	10.3	59	24	17
3	Mild	15,000	3'30"	4'	Normal	Not done	53	3.3	10.9	74	23	3
4	Severe	25,000‡	58'	1'30"	Not done	Not done	21	1.9	24.0	84	10	6
5	Moderate	6,000	10'	3'	Prolonged	Positive	65	3.7	8.7	60	32	8
6	Moderate	15,000	5'30"	3'	Prolonged	Not done	56	3.1	9.9	73	21	6
7	Severe	6,000	17'	5'	Not done	Not done	33	3.2	5.5	85	10	5
8	Moderate	19,000	15' plus	5'	Prolonged	Positive	75	5.3	8.6	52	32	16
9	Severe	15,000	4'	5'30"	Not done	Not done	32	2.2	5.7	85	25	10
10	Moderate	26,000	15'30"	2'45"	Prolonged	Positive	75	3.8	6.9	72	16	12

\* Eosinophils, basophils and monocytes.

† 20,000 8 months later at his second admission (prior to operation).

‡ Accuracy of these values open to question.

§ Interns count; no platelets seen in admission blood smear.

TABLE 2.—Initial Blood Picture and Severity on Admission in Group in Which Operation Was Not Performed

Case	Severity	Platelets	Bleeding Time	Clotting Time	Clot Retraction	Tourniquet Test	Hemoglobin (% Sahli)	Red Blood Cells in Millions	White Blood Cells in Thousands	Poly-morpho-nuclears	Lym-phocytes	Other Cells
13	Severe	Too few to count	38'	5'	Prolonged	Not done	28	2.7	17.5	79	19	2
14	Moderate	15,000	21'20"	2'30"	Prolonged	Positive	74	4.1	8.6	54	37	9
15	Moderate	35,000	28'30"	3'	"Fair"	Positive	70	3.4	9.5	59	36	5
16	Mild	45,000	15'	1'	Prolonged	Positive	100	5.8	5.5	48	50	2
17	Mild	20,000	4'20"	5'30"	Normal	Negative	45	3.1	10.0	73	19	8
18	Moderate	8,000	33' plus	3'	Prolonged	Not done	78	4.4	10.5	66	22	12
19	Mild	28,000	9'45"	3'	Prolonged	Faintly positive	85	3.9	8.4	78	14	8
20	Moderate	8,000	4'30"	2'15"	Not done	Positive	88	5.4	6.9	72	16	12
21	Moderate	6,000	12'	2'30"	Not done	Not done	63	3.9	5.8	60	26	14
22	Moderate	12,000	6'30"	2'30"	Prolonged	Not done	75	3.2	7.2	47	48	5
23	Mild	40,000	3'50"	5'45"	Prolonged	Not done	76	4.4	5.3	65	34	1

males outnumbered the females by two to one. As far as the nationality is concerned, our observations are in agreement with those of other observers in that the disease showed no predilection for race or nationality: the two series embraced four Americans, one American Negress, four Italians, one Austrian, two Irish, one Irish-American, one Swedish-American, and seven of Russian-Jewish extraction. The high incidence of the last mentioned may be partially explained, we think, by the fact that the Presbyterian Hospital is located in a district in which the population is largely Jewish.

## TYPE OF DISEASE

Fifteen of the cases were chronic and six were incipient. Of the former, five were mild, seven moderately severe and three severe. Of the latter, none were mild, five were moderately severe, and one was severe.

## CLINICAL PICTURE

The clinical picture here recorded appears as it was noted by the examiner on the patient's first admission

four days; the remaining seven were chronic. Thus the spleen was palpable in one out of five incipient cases and in seven out of fifteen chronic cases.

## BLOOD PICTURE

From tables 1 and 2 it will be seen that the initial blood observations in our two groups of cases conform closely to the hematologic diagnostic criteria which have come to be associated with so-called idiopathic thrombocytopenic purpura. In none of the twenty-one cases did the platelet count exceed 45,000. The bleeding times were for the most part prolonged, and the clotting times were generally normal. The clot retraction was delayed in thirteen cases, not done in five, normal in two, and recorded as "fair" in one. The tourniquet test was reported in nine cases: in seven of these it was positive, in one faintly positive, and in one negative. The values for red blood cell count and hemoglobin varied from a low of 1,900,000 with 21 per cent hemoglobin to 5,800,000 with 100 per cent hemoglobin. In those cases in which anemia was present it was of the secondary type and varied with the duration, degree and extent of clinical bleeding. No white counts below 5,300 were recorded and the highest figure was 24,000.

19. McLean, Stafford; Kreidel, Katherine, and Caffey, John: Hemorrhagic Thrombocytopenia in Childhood: A Clinical Study of Twenty-One Cases, J. A. M. A. 98: 387-393 (Jan. 30) 1932.

In general it may be said that both the white and the differential counts were within normal values, though a polymorphonuclear leukocytosis of over 80 per cent occurred in two instances.

It will be seen that the one constant factor among the initial blood values was the thrombocytopenia. By the very nomenclature of the disease this is, of course, a primary requisite for diagnosis. With a single exception, all platelet determinations recorded in this paper were performed by a small group of permanent members of the hematology department of the hospital. All other platelet counts, including those performed by interns, were discarded as unreliable. We feel, therefore, that our platelet values are as nearly accurate as is possible in a series of this nature. Of the remaining factors included in tables 1 and 2, the same cannot be said. We do feel, however, that the blood count values (red cell, white cell, hemoglobin and differential) as

removed at operation in this series.<sup>20</sup> In only one instance (case 21) was a culture made of the spleen, and in this case a nonhemolytic streptococcus was recovered. Necropsy was not performed on the one patient who died in the operative group. Postmortem examination on the single fatal case in the control group disclosed massive subdural, subarachnoid and cerebellar hemorrhages which were both old and new; extensive extravasations of blood into the majority of the abdominal organs; a bone marrow that appeared normal except for slight hyperplasia; congestion and small areas of hemorrhage in the lymph nodes, and hemorrhage into the splenic follicles with some thickening and hyalinization of the capsule of the spleen.

#### POSTOPERATIVE COURSE

Of the ten patients who underwent splenectomy in this series, only three had postoperative courses that

TABLE 3.—Results in Cases in Which Operation Was Performed

Case	Age at Operation	Duration Before Operation	Type	Severity at Operation	Preoperative Transfusions	Post-operative Platelet Rise*	Subsequent Clinical Course	Follow Up	End Result
1	17	53 mos. intermittent	Chronic	Moderate	1	180,000 3d day	Marked improvement 1st 6 mos.; severe recurrence 18th month	18½ mos.	Died 18th month of cerebral hemorrhage
2	47	"All her life" intermittent; 3 mos. continuous	Chronic	Moderate	None	100,000 6th day	Asymptomatic past 10½ years	11 yrs.	Apparently permanently arrested
3	25	"For years" intermittent	Chronic	Mild	None	350,000 50th day	Asymptomatic except for occasional easy bruising and a questionable vaginal hemorrhage	9½ yrs.	Improved; subject to mild recurrences
4	13	10 yrs. intermittent	Chronic	Severe	3	None	Moderately severe purpura for 8½ yrs. following operation; asymptomatic since	9 yrs.	Markedly improved; excellent late result
5	13	8 yrs. intermittent	Chronic	Moderate	None	360,000 9th day	Asymptomatic since operation	7½ yrs.	Apparently permanently arrested
6	11	2 months	Incipient	Moderate	1	500,000 6th day	Asymptomatic except for occasional mild epistaxis	6 yrs.	Markedly improved; excellent result
7	33	10 yrs. intermittent; 3 mos. continuous	Chronic	Severe	3	None	Asymptomatic after 1st 16 mos. except for occasional black and blue spots	3½ yrs.	Markedly improved; excellent result
8	40	5 yrs. intermittent; 6 mos. continuous	Chronic	Moderate	None	59,000 7th day	Asymptomatic except for mild skin purpura on last follow-up visit	3 yrs.	Markedly improved; excellent result
9	15	7 yrs. intermittent; 6 mos. continuous	Chronic	Severe	1	350,000 2d day, 1,025,000 6th day	Asymptomatic since operation	2½ yrs.	Apparently permanently arrested
10	54	5 yrs. intermittent	Chronic	Moderate	1	343,000 4th day 601,000 5th day	Asymptomatic since operation	1 yr.	Apparently permanently arrested

\* Figures represent peak of rise occurring prior to discharge.

performed by the intern staff are sufficiently accurate for the purpose of this paper. Some of the figures for bleeding time, clotting time and clot retraction, particularly the first two, are undoubtedly open to question, and it is our opinion that these determinations should be done, whenever possible, by trained technicians. Unfortunately such was not the case in the large majority of instances in our series, and this, we think, may partly explain the appearance in our tables of a clotting time which was unduly prolonged and several bleeding times which closely approach the normal.

Blood groupings were done in thirteen of the twenty-one cases. Of these eight were OI, two were AII, and three were BIII. None were in the ABIV group.

#### PATHOLOGIC CHANGES

It is generally conceded that the spleens removed in this group of thrombocytopenic purpuras are singularly free from constant pathologic characteristics and, as might have been expected, nothing of unusual interest was brought to light on examination of the ten spleens

were entirely uneventful. The complications occurring in the remaining seven cases were as interesting as they were varied. Patient 1 remained in severe shock for the first twenty-four hours after operation but thereafter had a smooth convalescence. Patient 2 did well throughout her postoperative course except for two severe nasal hemorrhages on the sixteenth and twentieth days. Patient 3 developed a bronchitis shortly after operation and on the fifth day had a massive collapse of the left lung, which in turn was followed by a wound disruption (without evisceration) on the ninth day. For the first forty-eight hours after operation, patient 6 was in marked acidosis with acetone breath and acetonuria. Accompanying this he had a pronounced tachycardia. These complications had disappeared by the third day and did not reappear. The postoperative course in case 7 was marked by the development of a brief period of mental aberration and emotional instability. This was thought to be due either to iodoform

20. It is interesting however that, in the operative notes, enlargement of the spleen was reported in all but three cases.

poisoning from the anteoperative packing of the vagina or to cerebral hemorrhage. Shortly after operation, patient 8 developed an unexplained area of skin gangrene in the right lower quadrant. The involved skin subsequently sloughed away and the lesion was pinch grafted. Bacteriologic examination failed to reveal symbiotic or hemolytic organisms. The last patient in the operative group (case 10) developed pneumonia in the left lower lobe on the third day after operation. Resolution was delayed, considerably prolonging her subsequent convalescence.

It will be seen from the foregoing that the series of complications was long and in certain cases rather unusual. Whether or not this was pure coincidence is difficult to say. We do feel, however, that in our small series the postoperative course following splenectomy had more than the number of unexpected and unexplained complications usually seen in a series of equal size in which the operations were of a similar magnitude.

entirely asymptomatic since discharge from the hospital, though in one of the five the platelet level has remained consistently low. The discrepancy between the platelet level and the clinical bleeding illustrated in this last case has been commented on by many observers. In at least four other cases the reverse was true; i. e., mild intermittent purpura was occasionally seen throughout the subsequent follow up despite a normal or even slightly elevated platelet count.

In one case in which the platelets did not respond to operation the patient continued to have moderately severe purpura for eight and a half years and then, following pregnancy, all symptoms ceased, though the platelet count remained low. The one death reported in this series occurred eighteen months after operation from cerebral hemorrhage. It is of interest that in this case splenectomy was followed by a brief rise in the platelets to 180,000 on the third day. Subsequently a fall to below 80,000 ensued, and this figure was never exceeded thereafter. The disease was arrested for

TABLE 4.—Results in Cases in Which Operation Was Not Performed

Case	Age on Admission	Duration	Type	Severity	Transfusions	Subsequent Clinical Course	Follow Up	End Result
13	40	3 months	Incipient	Severe	10	Intermittent mild purpura for 11 yrs.	11 yrs. (by letter)	Improved
14	33	6 months	Incipient	Moderate	None	Moderately severe purpura 1st year, thereafter mild	6 yrs.	Improved
15	11	6 months intermittent, 3 weeks continuous	Incipient	Moderate	1	Severe flareup 4th week	26 days	Died of cerebral hemorrhage 26 days after admission
16	19	6 years intermittent	Chronic	Mild	None	Mild intermittent purpura for 5 years	5 yrs.	Unimproved
17	35	"Since childhood" intermittent, 3 weeks continuous	Chronic	Mild	None	Asymptomatic past 2½ years	4½ yrs.	Spontaneously arrested
18	46	4 days	Incipient	Moderate	7	Asymptomatic past 3 years	3½ yrs.	Spontaneously arrested
19	39	"All her life" intermittent	Chronic	Mild	None	Mild intermittent purpura for 4½ years	4½ yrs.	Unimproved
20	51	39 years intermittent	Chronic	Moderate	None	Moderately severe intermittent purpura for 2 yrs.	2 yrs.	Unimproved
21	29	1½ years intermittent	Chronic	Moderate	1	Moderately severe intermittent purpura for 2 yrs.	2 yrs.	Unimproved
22	26	5 days	Incipient	Moderate	1	Asymptomatic for past 23 months	2 yrs.	Spontaneously arrested
23	51	"Since birth" intermittent	Chronic	Mild	None	Intermittent mild purpura for 1 yr.	1 yr.	Unimproved

BLOOD PICTURE FOLLOWING SPLENECTOMY AND  
SUBSEQUENT CLINICAL COURSE

In all but three of the splenectomized group there was a platelet rise following operation that reached 100,000 or better. Generally speaking the rise was initiated within forty-eight hours of operation and reached its peak within the first ten days. In one instance, however, the rise was delayed and the peak not reached until thirty days subsequent to operation. The height of the rise in all but two cases exceeded 300,000 and in one case reached 1,025,000 six days after operation. In every instance in which a rise took place it was followed by a secondary fall of varying magnitude, and in two of these seven cases the fall carried the platelets below 100,000. There were three cases in the group whose platelets remained at a low level throughout their subsequent follow up, though two of these had a temporary rise following operation. In every instance there was a varying degree of improvement in the clinical symptoms of the disease immediately following splenectomy. In five of the cases all evidence of hemorrhage ceased within seventy-two hours of operation, in at least two it ceased immediately after the procedure. Five cases have been

about eight months after operation, but the patient later died in a fulminating recurrence.

It seems appropriate to call attention here to the fact that, following splenectomy, one of our patients gave birth to a child with all the classic signs and symptoms of thrombocytopenic purpura (case 4).

*Course in Cases in Which Operation Was Not Performed* (subsequent to admission to the hospital or outpatient department).—The first of these cases was admitted to the hospital prior to the era when splenectomy became a generally accepted therapeutic measure in thrombocytopenic purpura. This patient left the hospital with the disease largely arrested, her symptoms having apparently been partially controlled by radium sterilization and ten transfusions (case 13). After discharge she moved to another part of the country but has continued to suffer with the disease, though in mild form. Case 14 yielded sufficiently to eradication of foci of infection in the teeth and x-ray sterilization so that contemplated operation seemed no longer necessary. This patient, however, still has the disease in a mild form. Case 15 was a singularly deceptive one. During the first admission to the hospital the purpura yielded so well to conservative therapy that splenectomy

was not considered necessary. Shortly after leaving the hospital, however, the patient had a fulminating exacerbation of the disease and was readmitted within a week in a moribund condition. She lived for less than one hour after admission, and necropsy revealed that death had been due to cerebral hemorrhage. In case 18 splenectomy was deferred because a leukopenia cast temporary doubt on the diagnosis. After seven transfusions the patient had improved so markedly that splenectomy was felt to be superfluous and within eight

TABLE 5.—Totals in the Two Groups

	With Operation	Without Operation	Totals
Completely arrested.....	4	3	7
Markedly improved.....	4	0	4
Improved.....	1	2	3
Unimproved.....	0	5	5
Died.....	1	1	2
Totals.....	10	11	21

months of the onset of the disease a spontaneous arrest occurred which persisted throughout the subsequent follow up. In case 20 splenectomy was obviously the therapy of choice, but the patient repeatedly refused operation and even refused to enter the hospital for observation. The severity of her symptoms since her first visit to the outpatient department has remained essentially unchanged. In case 21 splenectomy was decided on, but the patient changed her mind and refused operation. Throughout her subsequent course no improvement in her condition has been noted.

Two cases, 16 and 23, were ambulatory and have not thus far required hospitalization despite the fact that their mild purpura continues unabated to the best of our knowledge. Of the three remaining cases, all were studied in the hospital at least once and operation was considered but rejected on account of the mildness of the symptomatology. One of the three cases remains unimproved. The other two have become spontaneously arrested. It is of interest that of the entire eleven cases in the group in which operation was not performed the platelet level has returned to a normal figure in only three instances. These three patients are the only ones in the group in which the condition has become spontaneously arrested.

## RESULTS

As will be seen from table 5, we have grouped our results for the two series under five headings: arrested, markedly improved, improved, unimproved and died. Under the first category there were four cases in the operative to three in the control group. These cases are apparently definitely arrested. In the "markedly improved" division there are four of the operative to none of the control group. These represent cases which, by reason of an occasional mild symptom or inconsistency in an otherwise perfect follow up, we cannot in conscience include among the definitely arrested. Under the heading of "improved" we have listed one splenectomized and two nonsplenectomized patients. These are individuals who still show persistent evidence of their original disease, but in a milder form. The "unimproved" category needs no explanation. It is significant, however, that there were no cases from the operative group listed under this heading, while the control series was represented by five. One case from each group was fatal. Since the single individual lost in the operative group died eighteen months after operation during an exacerbation of the disease, our operative mortality is zero.

Although we fully realize that in so small a series the validity of statistics is open to question, we have condensed the foregoing observations into the following more readily appreciated figures for purposes of comparison with other series: In the splenectomized group 80 per cent of the cases were vastly improved or arrested, while the same can be said of only 27.2 per cent of the control series. It will be seen further that under improved but by no means arrested we find 10 per cent of the operative and 18.1 per cent of the controls, and that under unimproved or died we find 10 per cent of the splenectomized and 54.5 per cent of the nonsplenectomized. In short, we have found three times as many excellent results among the operative group as among the controls, and five times as many poor results among the controls as among the operative group.

## CONCLUSIONS

1. In carefully selected cases of thrombocytopenic purpura, adequately prepared for operation, splenectomy by an experienced surgeon is a highly effective form of therapy, carrying a relatively low operative mortality.

2. The subsequent course of such patients, when compared with their lives previous to operation and with the lives of patients treated by conservative measures, justifies the risks inherent in a major operative procedure.

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## THE RÔLE OF CONGESTION (PORTAL HYPERTENSION) IN SO-CALLED BANTI'S SYNDROME

A CLINICAL AND PATHOLOGIC STUDY OF THIRTY-ONE CASES WITH THE LATE RESULTS FOLLOWING SPLENECTOMY

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During the past several years in the Spleen Clinic of the Presbyterian Hospital there have been collected well studied cases of splenomegaly of all types. Many of these were readily classified in one of the several established disease entities. This presentation is an effort to abstract some order out of the large remaining number of cases that had been grouped under the inclusive caption of Banti's disease. As the study developed it became apparent, as it had to many others before us, that we were not dealing with a sequence of clinical and pathologic features as described by Banti. Instead we had an apparently heterogeneous group of cases that presented certain similar characteristics and that shall henceforth be grouped under the name of Banti's syndrome.

As a result of this investigation we shall consider the possibility of a common etiologic factor operating in all these different cases to produce a similar clinical syndrome. The following criteria, as originally laid down by Banti,<sup>1</sup> were drawn on to determine the eligi-

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The clinical and pathologic studies in the two cases of schistosomiasis and the experimental studies referred to in the course of this paper have been carried out at the School of Tropical Medicine under the auspices of Columbia University at San Juan, Puerto Rico. Dr. George Bachman, director, and his staff gave generous assistance in these studies.

1. Banti, Guido: Splenomegalie mit Lebercirrhose, Beitr. z. path. Anat. 24: 21, 1898; Ueber Morbus Banti, Folia haemat. 10: 53, 1910.

bility of each particular case for classification within the group. In each individual there was enlargement of the spleen, anemia of varying severity, leukopenia, often intestinal hemorrhages and sometimes ascites. The splenic lesion likewise was consistent with that described by Banti and others and will be discussed more fully in a later section.

This paper will include an outline of the essential features bearing on the diagnosis, on the indications for splenectomy and on the results following operation.

Thirty-one cases comprise the group, and in all splenectomy was performed. These patients all received detailed clinical and hematologic studies before operation and were similarly followed for long periods after operation. The follow up was done at frequent intervals and included the return of the patient for physical examination, complete blood examinations and other studies as indicated.

The thirty-one cases under consideration include all age groups from early childhood to adult life. The division as to sex was even, with sixteen females and fifteen males.

There was no suspicion of a hereditary factor in any of these cases such as one encounters in hemolytic jaundice or Gaucher's disease.

These cases represented a wide ethnologic distribution. We could find no evidence of any racial predisposition. This observation is mentioned only because of the striking racial constancy of some other forms of splenomegaly; namely, erythroblastic anemia and sickle cell anemia.

With the subsequent three exceptions, a careful inquiry into the past health of each of these patients failed to uncover any specific disease entity or other factors that might be the precursor of the splenic lesion. Two patients had the late visceral form of schistosomiasis *mansoni* with hepatosplenomegaly. In a third patient the following interesting sequence of lesions developed while he was under observation: After a severe abdominal injury a pseudocyst of the pancreas developed. This was operated on. At this time the spleen was normal in size and the blood picture was normal. Two years after this operation and three years after the injury he had a sudden severe hematemesis. On examination he was found to have a large spleen, anemia and leukopenia.

#### SYMPTOMATOLOGY

Although the disease is usually insidious in its onset, its first warnings may appear with startling suddenness. The most frequent complaint is that of a gradually developing weakness. By far the greatest number of patients in this group, sixteen in fact, declared this to be the initial symptom. Next in frequency and usually most distressing, is the gradual enlargement of the abdomen. Twelve of the group noticed this first. In two of these, distinct mention was made of feeling a lump on the left side of the abdomen. The prominent abdomen in these cases is usually the result of the splenomegaly or ascites or both these factors.

Probably the most alarming sign to the patient, and assuredly the most serious from the point of view of prognosis, is the onset of hematemesis. In eleven instances the individual was unaware of the illness until the sudden appearance of bloody vomitus. Some had only one such experience and others had it on numerous occasions. Hematemesis proved to be the first indication of the disease in six cases, while in five others

it appeared later in the course. It is interesting to analyze these cases separately. Hematemesis occurred in four of the cases of the Laënnec type of cirrhosis, in the one case of cavernomatous transformation of the portal vein, in one case of thrombosis of the splenic vein, and in four cases in which no "obstructive mechanism" was demonstrable.

Klemperer,<sup>2</sup> in reviewing the literature on the rare condition of cavernomatous transformation of the portal vein, reported twenty-three cases with nine instances in which hematemesis took place.

It is obvious that portal congestion and the development of esophageal varices do occur in the absence of liver cirrhosis and may be the result of other pathologic conditions.

The longest span over which hematemesis occurred prior to operation in this series was in a case in which it occurred twice in three years. Brahme<sup>3</sup> reported a case of splenic vein thrombosis with repeated hematemeses over a period of forty-five years.

Pain was a fairly frequent complaint and appeared in thirteen, or 42 per cent, of the group. The type, severity and location of the pain are usually dependent on the underlying pathologic lesion. Pain was present at some time in both cases of thrombosis of the splenic vein. This was severe and was located in the epigastrium or left hypochondrium and did not radiate. Besides this intense type of pain, mild epigastric, left upper quadrant and sometimes generalized abdominal pain occurred. The discomfort in some instances was apparently due to the increased weight of the spleen alone. A perisplenitis usually gave sharp pain, aggravated by deep respiration and often with an audible friction rub.

Digestive disturbances were not infrequent. Anorexia and associated weight loss occurred in six instances. Periods of nausea and vomiting were complained of by three patients. Epigastric fulness proved very distressing to three others of the group. Belching, sour eructations or diarrhea were rarely noted.

Epistaxis occurred frequently in five of the cases. There seemed to be no relation between this bleeding tendency and the platelet level. This symptom did not recur following splenectomy except in one of the cases of schistosomiasis, and this patient had only one slight nosebleed following operation. In none of these individuals was there any other hemorrhagic manifestation.

Symptoms referable to the urinary tract were rare. One woman's chief complaint was that of urinary incontinence. She had previously had a perineorrhaphy without relief of this symptom. Following the removal of a very large spleen, this distressing feature was immediately relieved and has remained so. Presumably this was caused by the enlarged spleen pressing on the bladder. It has been something of a surprise to us to find that urinary symptoms are not more frequent.

Cardiac symptoms are seldom seen in the disease. In three cases presenting severe anemia and no apparent heart lesion, dyspnea occurred. Palpitation and precordial distress were present in one case.

We have not been able to correlate symptomatology with the stage of the disease. Patients frequently present themselves with few symptoms and at operation a combination of several advanced lesions is found.

2. Klemperer, Paul: Cavernomatous Transformation of the Portal Vein, Its Relation to Banti's Disease, *Arch. Path.* 6: 353 (Sept.) 1928.  
3. Brahme, L.: Ein Fall von chronischem Portalhindernis, *Acta med. Scandinav.* 61: 175, 1924.

of the splenic vein, and one case of cavernomatous transformation of the portal vein.

In seven of the nine cases of Laënnec cirrhosis and the two unclassified cirrhotics the diagnosis was confirmed by liver biopsy.

In our two cases of splenic vein thrombosis, one was post-traumatic and the other was without known cause. In both of these, venous dilatation occurred proximal to the occluded vessels.

One of our youngest patients had a most unusual lesion. At necropsy within two days following splenectomy a cavernomatous transformation of the portal vein was found. Marked dilatation of the splenic and gastric veins was observed and death was due to the rupture of esophageal varices.

Klemperer<sup>2</sup> reported a case of this rare condition and collected twenty-two additional examples. Of these twenty-three cases, twenty-two presented splenomegaly and all showed varying degrees of occlusion of the portal or splenic veins. Klemperer's patient had had a splenectomy for supposed Banti's disease several years prior to death.

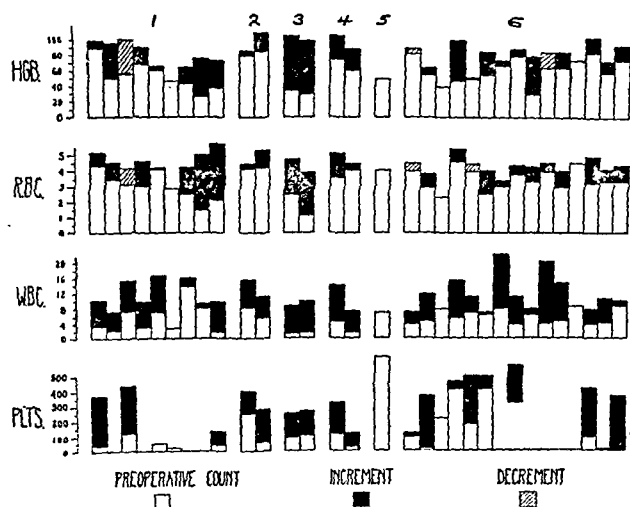


Chart 2.—Preoperative blood counts are represented by unshaded blocks. The postoperative blood values (increment or decrement) at the time of the last follow-up visit are represented as shaded or cross-hatched blocks.

The two cases of schistosomiasis mansoni in our group represent the first two of a larger series to be reported by Dr. Whipple in a subsequent paper. The mode of infection and the pathology of bilharziasis are now well known. Faust, Jones and Hoffman<sup>20</sup> have shown that the maturing phase of the parasite in the human host takes place in the hepatic, portal and mesenteric veins. Following deposition of eggs in the liver, a pseudotubercle or fibrous nodule is formed. If the infestation is sufficiently heavy, a severe form of cirrhosis results. Coupled with this cirrhosis is a splenomegaly, and with the hepatosplenomegaly there is often a blood picture similar to that in Banti's syndrome. Oddly enough, this striking similarity of Banti's disease to the late visceral stage of schistosomiasis mansoni is one that has received scant mention. Bonelli<sup>21</sup> drew the clinical comparison but

concluded that the Banti-like picture in late schistosomiasis was on the basis of a toxin of intestinal origin. Girges<sup>22</sup> with his extensive experience in Egyptian splenomegaly includes Banti's disease as a differential diagnosis of the late stage of the disease.

During the past several years, those working in the Spleen Clinic have been conducting clinical and experimental studies in Puerto Rico, where schistosomiasis is endemic. We have been interested in studying the development of the hepatosplenomegaly under conditions in which a known parasite is the inciting cause of the liver cirrhosis. At operation in the two cases reported herein, a severe grade of liver cirrhosis was apparent and was proved by biopsy.

In summary, therefore, in our thirty-one cases there were fifteen in which no "obstructive factor" could be demonstrated at operation. Thirteen cases presented some form of liver cirrhosis. Two cases presented thrombosis of the splenic vein, and one a cavernomatous transformation of the portal vein.

#### THE RESPONSE TO SPLENECTOMY

All the cases recorded in the foregoing sections have been followed carefully and the response to splenectomy will be considered according to groups and in each instance the hematologic observations will be reviewed, the preoperative being compared with the postoperative level.

The follow-up results in the various groups can be traced in chart 1. The cases are retained in the groupings as previously described: (1) Laënnec cirrhosis, (2) unclassified cirrhosis, (3) schistosomiasis mansoni, (4) thrombosis of the splenic vein, (5) cavernomatous transformation of the portal vein, (6) obstructive factor not demonstrated.

It is immediately apparent that the poorest results appear in the group having Laënnec cirrhosis. There were nine cases presenting the combination of this type of cirrhosis and Banti's syndrome. The immediate hospital mortality included two cases, or 22 per cent. One of these patients died of hematemeses and one of surgical shock. The remaining five fatalities occurred in periods varying from three months to thirteen years. Four patients succumbed to severe hematemeses and the fifth had recurring ascites and died of hepatic insufficiency. In spite of the poor late results, 66 per cent of the group were well from periods varying from two to thirteen years following operation.

The outcome of the succeeding groups was obviously much more encouraging. The patients having the unclassified type of cirrhosis, schistosomiasis mansoni or thrombosis of the splenic vein have all done exceedingly well. As is seen in chart 1, these individuals have been entirely symptom free and have remained well for long periods.

The one patient with cavernomatous transformation of the portal vein had had repeated hematemeses for two years prior to operation and promptly succumbed to a similar massive hemorrhage forty-eight hours after operation.

Our last series of fifteen cases in which the "obstructive factor" could not be demonstrated gave a hospital mortality of two cases, or 13 per cent, and a late mortality of three cases, or 20 per cent. The remaining ten patients (66⅔ per cent) have with one exception continued in excellent health for periods up to ten

20. Faust, E. C.; Jones, C. A., and Hoffman, W. A.: Studies on Schistosomiasis Mansoni in Puerto Rico: III. The Mammalian Phase of the Life Cycle, Puerto Rico. J. Pub. Health & Trop. Med. 10: 133 (Dec.) 1934.

21. Bonelli, P.: Analogía entre la schistosomiasis mansoni y la enfermedad de Banti o anemia esplénica. Bol. Asoc. méd. de Puerto Rico 23: 251 (July) 1931.

22. Girges, Rameses: Schistosomiasis, London, John Bale, Sons and Danielsson, Ltd., 1934.

years.<sup>23</sup> The single exception has had a miserable clinical course punctuated by repeated hematemeses over a span of ten years and is still alive. The cause of death in the last series included one case each of hematemesis, hepatic insufficiency, brain cyst, cerebral thrombosis and surgical shock.

From the foregoing experience one is immediately impressed with the gravity of hematemesis as a prognostic sign. Of the eleven patients who had evidence of esophageal hemorrhage prior to operation, seven died of the same complication. We have accordingly accepted hematemesis as an ominous symptom and feel that in this type of case operation should be avoided.

Although thrombotic phenomena are reported as being frequent sequelae of splenectomy in Banti's syndrome, only one patient in this study had this complication. Rosenthal<sup>6</sup> has emphasized the danger of thromboses after splenectomy in the "thrombocythemic" form of Banti's disease. Our experience does not confirm this observation. Graham Bryce<sup>24</sup> has shown that an apparently unsuitable case with a normal platelet count can be safely steered through the danger of splenectomy and, conversely, a low platelet count prior to operation does not necessarily protect the patient from fatal thrombosis.

As a parallel to the clinical improvement in our cases there has also been a favorable response in the blood picture. From chart 2 it is seen that, following splenectomy, there is usually a rise of the erythrocyte count, the hemoglobin content and the leukocyte and platelet levels. The groups as listed 1, 2, 3 and so on correspond directly to the same numbered groupings in chart 1. It is of interest to note that the total leukocyte count usually remains at a fairly high level throughout life, averaging 12,000 per cubic millimeter.

#### COMMENT

Reviewing the previous data, we wish to stress the clinical sequence of events of three cases in which there is adequate knowledge of the etiology and progress of the disease.

The two cases of schistosomiasis presented the classic features of the visceral stage of the disease. The pathogenesis and pathology of this disease are now well known. In such cases as we have described, there is a cirrhosis of the liver and splenomegaly. The cirrhosis follows pseudotubercle formation around ova deposited in the liver. The parasite rarely reaches the spleen except in overwhelming infestations. In spite of the absence of ova in the spleen, a scarring of this organ occurs. Although the splenic picture has been explained on the basis of toxins liberated by the parasites as they inhabit the portal and mesenteric veins, we believe that the splenomegaly can be secondary to the liver cirrhosis and the resultant portal venous congestion. It is certainly noteworthy that this tropical disease can in its late stages so well mimic Banti's disease.

The third case of interest to us is one in which we had the good fortune to have the clinical picture develop under our own observation. The history of this individual included a severe abdominal injury, followed by the development of a traumatic pseudocyst of the pancreas. This was operated on two years after the injury. At this time the spleen was not enlarged and the blood picture was normal. One year

later (three years after the injury) the patient began to have severe pain in the left upper quadrant, weakness and then suddenly a hematemesis. At this time it was found that the spleen was markedly enlarged and that the blood changes were consistent with a diagnosis of Banti's syndrome. At operation, occluded splenic veins were palpable.

These three cases have been separately emphasized, as they seem to be supporting links in our chain of evidence to show that at least in some cases of Banti's syndrome a primary obstructive factor exists.

#### SUMMARY

In a group of thirty-one cases, similar characteristics were apparent. In all, a state of venous congestion existed, as was evidenced by the dilated, tense venous channels in the portal or splenic bed.

There were sixteen instances in which a specific "obstructive factor" could be demonstrated as the possible agent producing venous stasis. However, in fifteen cases no evidence of an obstructive mechanism could be found.

A state of "portal hypertension" probably is present in all cases of Banti's syndrome. Splenic venous pressure determinations have been done in a few selected cases. These have been consistently higher than the peripheral venous pressure.

Our clinical and pathologic studies have led us to believe that in some cases this "portal hypertension" is secondary to the various obstructive lesions as described, whereas in other cases this may occur, as intimated by McMichael, as a primary disturbance of the portal system without a visible obstructive factor.

We believe that the mechanical interference with the splenic circulation may result in so-called congestive splenomegaly. This in turn may affect the activity of blood formation with depression of the cellular elements in the blood.

Following splenectomy in any of the groups previously discussed, this inhibitory effect is apparently removed, permitting a gradual return of the blood values to normal.

The indications for splenectomy and the long term prognosis are dependent on the nature and severity of the "obstructive factor." Obviously splenectomy is contraindicated in the presence of severe liver damage. The late results of splenectomy in our cases with Laënnec cirrhosis have been poor. The results in the remaining groups of cases have been most encouraging.

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**Expert Witness.**—By the middle of the seventeenth century (in England) . . . the expert, possessed of a certain skill and knowledge, ceased to be an adviser to the court and was presented by one side or the other as a witness to the jury. Thus, although the value of his knowledge was still recognized, he had now become a partisan, at least in the eyes of the jury. In view of the contentious nature of legal proceedings, it was to be expected that counsel would present only experts favoring their particular thesis. Quite aside from honest differences of opinion, the possibility of bias must be recognized, and the unfortunate though rarer incidence of venality must be admitted. On the whole, it is not strange that the method of partisan introduction of expert evidence has brought suspicion on experts in general, and that as long ago as 1843 we find an English court saying "Hardly any weight is to be given to the evidence of what are called scientific witnesses; they come with a bias in their minds to support the cause in which they are embarked." (Tracy Peerage Case, 10 Cl. & F., 154.)—Overholser, Winfred: The Place of Psychiatry in the Criminal Law, *Psychiatric Quarterly* 10:197 (April) 1936.

23. Since the completion of this paper we have again seen patient 9 in group 6. It has now been sixteen years since the splenectomy. The patient is in excellent health; physical examination is negative and all blood values including the platelet count are normal.

24. Graham Bryce, A.: Splenectomy and Thrombosis, *Lancet* 2:1423 (Dec. 31) 1932.

RATE OF EXCRETION AND BACTERICIDAL POWER OF MANDELIC ACID IN THE URINE

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Last year we<sup>1</sup> presented data to show the minimal concentration of oxybutyric acid in urine and the optimal  $p_H$  of urine that were necessary to cause sterilization of urine that had been inoculated with various strains of organisms isolated from urine. This acid results from the incomplete combustion of fats when only extremely small amounts of carbohydrate are given. The so-called ketogenic diet is difficult for many people to take. Recent work originating in England and pioneered by Rosenheim<sup>2</sup> has resulted in the knowledge that mandelic acid, when administered orally, escapes metabolism or conjugation in the animal organism and is excreted in the urine by the kidney in a concentration sufficient for bactericidal action, provided the  $p_H$  of the urine is lowered simultaneously. This acid was chosen as a result of experiments with many organic acids.

TABLE 1.—Rate of Excretion of Mandelic Acid and the  $p_H$  of the Urine of a Dog Receiving a Continuous Intravenous Injection During Seven Hours of 700 Cc. of 1 per Cent Solution of Sodium Mandelate

Hours After Beginning Injection	Urine		$p_H$ of
	Volume of, Cc.	Concentration of Mandelic Acid in, per Cent	
2	22	1.5	8.18
4	112	0.98	7.15
6	245	0.50	6.49
7	161	0.50	5.83
Urea clearance after Injection:		Blood urea after Injection:	
27.1 cc. per minute		44 mg. per 100 cc.	
Urea clearance three days later:		Blood urea three days later:	
37.1 cc. per minute		30 mg. per 100 cc.	

N. B.: Same as table 1 in Proc. Staff Meet., Mayo Clin. 11:374 (June 10) 1936.

Methods for sterilization of urine in cases of infection of the urinary tract are undergoing change and there is a general trend toward establishment of a more simple type of therapy. As yet, the simplest type of therapy has not been found.

In this paper we present data descriptive of our experimentation on animals and of our clinical experience, demonstrating the rate of excretion of mandelic acid following oral ingestion by man and following intravenous injection into dogs of its sodium salt. We also present the result of observations establishing the concentration of acid and the  $p_H$  necessary for the urine to possess bactericidal activity against numerous strains of organisms isolated from the urine of individuals having infections of the urinary tract.

Mandelic acid was determined as recommended by Rosenheim. This technic yields slightly high results owing perhaps to extraction of small amounts of other organic acids. However, for the purposes at hand the

method is sufficiently accurate. Values for the  $p_H$  of the urine were determined by the quinhydrone-electrode technic.

In table 1 are given the rate of excretion of mandelic acid and the  $p_H$  of the urine of a dog that had received a continuous injection, during seven hours, of 700 cc. of a 1 per cent solution of sodium mandelate. It is evident that the concentration of mandelic acid reaches a value sufficient for bactericidal activity, provided the  $p_H$  of the urine is lowered to a value shown later to be the optimal one for bactericidal activity. The decrease

TABLE 2.—Excretion of Mandelic Acid in the Urine of a Patient Following Oral Ingestion of 5 Gm. of Mandelic Acid

Hours After First Dose	Urine	
	Volume of, Cc.	Concentration of Mandelic Acid in, per Cent
2	240	0.38
6	240	0.60
10	155	0.61
24	500	0.21

of concentration over a period of seven hours from 1.5 per cent to 0.5 per cent is caused by the diuresis produced by the injection of 700 cc. of fluid. The kidneys of this animal received a temporary insult, as is evidenced by the fact that the urea clearance after injection was lowered to 27.1 cc., with a value for blood urea of 44 mg. per hundred cubic centimeters. This urea clearance increased during the next three days to 37.1 cc., and the concentration of blood urea became 30 mg. in each hundred cubic centimeters. This is evidence of the fact that any injury that may be produced in the kidney is only temporary.

Table 2 demonstrates the excretion of mandelic acid in the urine of a man, following oral ingestion of 5 Gm. of sodium mandelate in one dose. Eighty per cent of the ingested mandelic acid appears in the urine within twenty-four hours and the maximal excretion occurs approximately two hours following oral ingestion of the acid.

Table 3 shows the rate of excretion of mandelic acid and the  $p_H$  of the urine of a patient who had ingested 3 Gm. of mandelic acid in the form of a 10 per cent solution of the sodium salt four times during the day,

TABLE 3.—Rate of Excretion of Mandelic Acid and the  $p_H$  of the Urine of a Patient Ingesting 3 Gm. of Mandelic Acid at Four Different Intervals; Ammonium Chloride Also Was Taken

Hours After First Dose	Urine		$p_H$ of
	Volume of, Cc.	Concentration of Mandelic Acid in, per Cent	
2	37	0.32	5.0
6	135	0.96	5.0
10	194	0.63	5.0
12	435	1.14	5.0

N. B.: Same as table 2 in Proc. Staff Meet., Mayo Clin. 11:374 (June 10) 1936.

and who also had ingested ammonium chloride as an acidifying drug to lower the  $p_H$  of the urine. This table illustrates the cumulative excretion of mandelic acid as various quantities are ingested and shows also that, although diuresis may be produced, the concentration of mandelic acid reaches a value in excess of 1 per cent.

Table 4 illustrates the concentration of mandelic acid and the  $p_H$  of the urine of a patient under prescribed treatment with ammonium chloride and mandelic acid

From the Section on Pediatrics (Dr. ... and the Section on Clinical Biochemistry (Dr. Osterberg), the ...  
1. Helmholtz, H. F., and Osterberg, A. Effect in Urine of Levorotatory and Racemic Beta-Oxybutyric Acid, Proc. Staff Meet., Mayo Clin. 10:620-622 (Sept. 25) 1935; The Bactericidal Effect of Levorotatory and Racemic Beta-Oxybutyric Acid in Urine, J. Urol. 35:86-92 (Jan.) 1936.  
2. Rosenheim, M. L.: Mandelic Acid in the Treatment of Urinary Infections. Lancet 1:1032-1037 (May 4) 1935.

in the form of the sodium salt. This table shows that the  $p_H$  of the urine can be lowered to a value of approximately 5.0 over a period of many days while a concentration of mandelic acid in the neighborhood of

TABLE 4.—Concentration of Mandelic Acid in the Urine and the  $p_H$  of the Urine of a Patient Under Treatment with Mandelic Acid and Ammonium Chloride

Day of Experiment	Urine	
	Concentration of Mandelic Acid in, per Cent	$p_H$ of
1	0.63	
2	1.1	
3	0.91	
4	0.75	5.2
5	0.45	5.0
6	0.90	5.0
7	0.16	5.0
8	0.27	5.1

1 per cent is maintained. These values have been shown to be most conducive to bactericidal activity. On the seventh day of treatment the ingestion of mandelic acid was stopped and the concentration in the urine was accordingly lowered considerably.

The bactericidal power of the urine was determined by the same methods that were employed in our earlier study<sup>1</sup> on beta-oxybutyric acid. Again we want to emphasize that control experiments show that, with the exception of *Proteus ammoniae*, we have not found gram-negative organisms isolated from urine of patients having urinary infections which were killed by a  $p_H$  of 5.0 in the absence of an organic acid (table 5).

The first series of experiments was done with urine from patients who received sodium mandelate, and the concentration of mandelic acid in the urine varied from 0.25 to 1.1 per cent. At a  $p_H$  of 5.0, mandelic acid 0.25 per cent is bactericidal for most organisms; at a  $p_H$  of 5.3, a concentration of 0.5 per cent is bactericidal, and at a  $p_H$  of 5.7 a concentration of 1.0 per cent is bactericidal (table 5). Just as is true of the bactericidal action of beta-oxybutyric acid, the lower the  $p_H$  the lower the concentration of acid necessary for bactericidal action. In a series of experiments in which a 1.0 per cent concentration of this acid was added to normal urine and in a series in which the acid was excreted in the urine in a concentration of 1.0 per cent after it had been administered by mouth, the bactericidal action corresponded very closely.

In the great majority of urinary infections the organisms are bacillary in type and in large measure are *Escherichia coli*, *Aerobacter*, *Proteus* and *Pseudomonas*. It was this group which was studied intensively. Ten strains of *Escherichia coli*, ten strains of *Aerobacter*, five strains of *Proteus ammoniae* and five strains of *Pseudomonas* were tested with concentrations of 0.25, 0.5 and 1.0 per cent mandelic acid at a  $p_H$  varying from 5.0 to 5.7. The strains of *Escherichia coli* and of *Proteus* ran true to form, as all the strains were killed at the same concentrations of acid and at the same  $p_H$  (tables 6 and 7). The ten strains of *Aerobacter* could be separated definitely into a group of three strains that were killed under the same conditions of concentration of acid and of  $p_H$  as the *Escherichia coli* and into a

group of seven strains that were killed only when the  $p_H$  of the urine was the same as that necessary to kill *Escherichia coli* but the concentrations of acid were higher, or when the  $p_H$  of the urine was lower and the concentration of mandelic acid remained the same (table 8). There was one strain that was killed only at a  $p_H$  of 5.3 and a concentration of 1.0 per cent mandelic acid. Of the ten organisms, four were motile and six were nonmotile. Of the strains of *Pseudomonas*, two corresponded to *Escherichia coli* and three to *Aerobacter* (table 9).

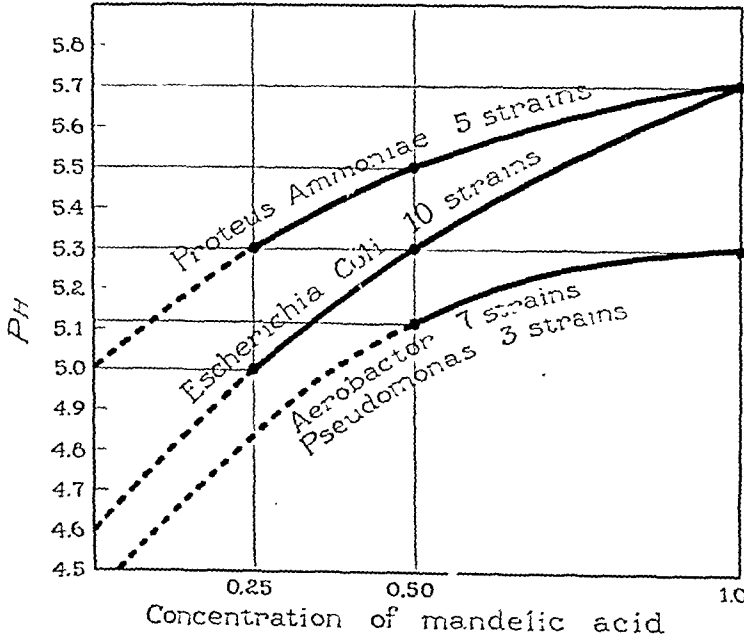
It is thus evident that *Escherichia coli* is uniformly killed at a certain  $p_H$  and concentration of acid and that

TABLE 5.—Bactericidal Effect of Urine Excreted by Patients Receiving Sodium Mandelate

Concentration of Acid in Urine	$p_H$ of Urine	<i>Escherichia Coli</i>	<i>Aerobacter</i>	<i>Proteus</i>	<i>Pseudomonas</i>
0	4.8	—	—	+	+
0	5.0	—	—	+	—
0.25	5.3	—	—	+	—
0.33	5.3	—	—	+	—
0.41	5.32	—	—	+	—
0.60	5.3	+	+	+	+
0.82	5.52	+	+	+	+
1.1	5.37	+	+	+	+

certain strains of *Aerobacter* and of *Pseudomonas* are killed at the same concentrations of acid and  $p_H$  but that to kill the greater number of strains a higher con-

BACTERICIDAL RANGE OF MANDELIC ACID



*Aerobacter* 3 strains } like *Escherichia Coli*  
*Pseudomonas* 2 strains }

Relation of concentration of mandelic acid to  $p_H$  of urine in the production of bactericidal action. Same as chart in Proc. Staff Meet., Mayo Clin. 11:376 (June 10) 1936.

centration of acid or a lower  $p_H$  is required, or both are required. This no doubt accounts for the conflicting results that various observers have obtained in treating infections with *Aerobacter* and with *Pseudomonas* by means of the ketogenic diet. Apparently the organism most easily killed is *Proteus ammoniae*, as is seen in all the experiments. The acidity of 4.8 alone in some

instances completely sterilizes a heavily inoculated urine. The difficulty in the treatment of infections with *Proteus* is the inability to acidify the urine because of the tendency of *Proteus* to produce a strongly alkaline

TABLE 6.—Bactericidal Effect of Mandelic Acid on Ten Strains of *Escherichia Coli*

Concentration of Acid in Urine	p <sub>H</sub> of Urine	Strains									
		1	2	3	4	5	6	7	8	9	10
0.25	5.0	+	+	+	+	+	+	+	+	+	+
0.25	5.3	—	—	—	—	—	—	—	—	—	—
0.5	5.3	+	+	+	+	+	+	+	+	+	+
0.5	5.5	—	—	—	—	—	—	—	—	—	—
1.0	5.5	+	+	+	+	+	+	+	+	+	+
1.0	5.7	+	+	+	+	+	+	+	+	+	+
1.0	6.0	—	—	—	—	—	—	—	—	—	—

\* Only three strains.

TABLE 7.—Bactericidal Effect of Mandelic Acid on Five Strains of *Proteus Ammoniae*

Concentration of Acid in Urine	p <sub>H</sub> of Urine	Strains				
		1	2	3	4	5
0.25	5.0	+	+	+	+	+
0.5	5.3	+	+	+	+	+
1.0	5.5	+	+	+	+	+
1.0	5.7	+	+	+	+	+

TABLE 8.—Bactericidal Effect of Mandelic Acid on Ten Strains of *Aerobacter*

Concentration of Acid in Urine	p <sub>H</sub> of Urine	Strains									
		1	2	3	4	5	6	7	8	9	10
0.25	5.0	+	+	—	—	—	—	—	+	+	—
0.50	5.12	+	+	—	—	—	—	—	+	+	—
0.50	5.3	+	+	—	—	—	—	—	+	+	—
1.0	5.3	+	+	+	+	+	+	+	+	+	+
1.0	5.5	+	+	—	—	—	—	—	+	+	—
Motility.....		—	—	+	—	—	+	+	—	+	—

TABLE 9.—Bactericidal Effect of Mandelic Acid on Five Strains of *Pseudomonas Aeruginosa*

Concentration of Acid in Urine	p <sub>H</sub> of Urine	Strains				
		1	2	3	4	5
0.25	5.0	—	+	+	+	+
0.5	5.12	+	+	+	+	+
0.5	5.3	—	+	—	—	+
1.0	5.3	+	+	+	+	+
1.0	5.5	—	+	—	+	+

TABLE 10.—Bactericidal Effect of Various Concentrations of Mandelic Acid on the *Staphylococcus*

Concentration of Acid in Urine	p <sub>H</sub> of Urine	Colonies in 0.5 Cc. Before and After 24 Hours' Incubation	
		Before	After
0.25	5.0	1,280	0
0.25	5.3	1,210	74
0.33	5.13	1,340	3
0.33	5.53	2,400	Innumerable
0.41	5.12	1,420	530
0.43	5.12	2,240	1
0.63	5.03	1,350	2,400
0.67	5.32	2,220	900
0.80	5.44	1,420	340
0.82	5.44	1,980	140
1.1	5.37	1,070	17

reaction in the urine. The accompanying chart shows in a graphic way the relationship of concentration of the mandelic acid and the p<sub>H</sub> of the urine in its bactericidal effect for various bacilli.

The bactericidal effect of mandelic acid on a large series of coccus organisms has not been studied but several strains of staphylococci have been tested out in

individual experiments and in a general way have been found to correspond, in respect of their vulnerability, to the bacillary group (table 10). Clinically also two patients have been freed from infection with *Streptococcus faecalis* by treatment with mandelic acid. It will be necessary, however, to make further determinations with a larger series of organisms to see whether they all fall within the same general range.

In conclusion, two facts can be stated: 1. By oral administration of sodium mandelate, concentrations of the acid varying from 0.25 to 1 per cent can be obtained readily in the urine. In this range of concentration the acid will act bactericidally on most organisms at a p<sub>H</sub> ranging from 5.0 to 5.7. 2. Certain strains of *Aerobacter* and *Pseudomonas* are far more difficult to kill than is *Escherichia coli*.

MANDELIC ACID AS A URINARY ANTISEPTIC

A CLINICAL STUDY

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It was shown as early as 1917 by Shohl and Janney<sup>1</sup> that the hydrogen ion concentration of urine affected the growth of bacteria, and they demonstrated that colon bacilli were retarded in growth in a urine of p<sub>H</sub> 5 or less and on the alkaline side of 9.2 or more. This fact has been utilized in the administration of ammonium chloride followed by methenamine intravenously or orally. The introduction of the ketogenic diet by Clark<sup>2</sup> and by Helmholz<sup>3</sup> in 1931 marked another step in the therapeutics of bacteriuria. Although the patient on a ketogenic diet developed a highly acid urine, it was soon found that the acidity of the urine, though helpful, was not the only factor in bringing about the growth-inhibiting effect but that some bactericidal substance was excreted (Clark, Dick, Helmholz<sup>4</sup>). A. T. Fuller<sup>5</sup> of the Barnhard Baron Memorial Research Laboratories of London started investigation to discover this effective agent. A chemical fractionation was carried out of a mixture of urines that were actively bacteriostatic. The removal of the urea, inorganic salts, phosphatides, proteoses, bases and amino acids did not reduce the bacteriostatic properties. After the lactic acid was removed, the levorotatory form of beta-oxybutyric acid was left, which was found to be the bacteriostatic property in the urine excreted by the patient on the ketogenic diet. Finding the amount of this substance to be small in the ketogenic urine, Fuller suggested giving it by mouth. Investigations carried

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The authors were assisted by Dr. Hollis N. Allen and Dr. S. H. Gray, who performed the bacteriologic work, and Drs. Thomas Saam and James B. Harris, resident urologists, City Hospitals, who managed some of the cases submitted in this clinical study.

1. Shohl, A. T., and Janney, J. H.: The Growth of *Bacillus Coli* in Urine at Varying Hydrogen Ion Concentration, *J. Urol.* 1:211-229 (April) 1917.

2. Clark, A. L.: *Escherichia Coli* Bacilluria Under Ketogenic Treatment, *Proc. Staff Meet., Mayo Clin.* 6:605 (Oct. 14) 1931.

3. Helmholz, H. F.: The Ketogenic Diet in the Treatment of Pyuria of Children with Anomalies of the Urinary Tract, *Proc. Staff Meet., Mayo Clin.* 6:609 (Oct. 14) 1931.

4. Helmholz, H. F.: The Ketogenic Diet in the Treatment of Urinary Infections of Childhood, *J. A. M. A.* 90:1305 (Oct. 15) 1932.

5. Fuller, A. T.: *Lancet* 1:855 (April 22) 1933.

out by a number of clinicians demonstrated it to be ineffective, however. As Cook and Braasch<sup>6</sup> commented, "Theoretically, this substance would be completely burned up if the body is in a normal metabolic state. The utilization of the usual amount of ingested carbohydrate is ample to oxidize completely this fatty acid before it can be excreted by the kidneys." Braasch demonstrated, however, that the introduction of beta-oxybutyric acid with a  $p_H$  of 4 into an infected bladder produced negative cultures in the majority of cases, thus demonstrating clinically the bactericidal action of the product.

M. L. Rosenheim,<sup>7</sup> of the University College Hospital, London, found the next piece to the jigsaw puzzle. The possibility suggested itself that a keto acid or hydrox acid might be found that would combine effective bacteriostatic power with resistance to oxidation in the body. Such an acid, if excreted unchanged in the urine and if nontoxic, should be able to replace the ketogenic diet. A number of fatty acids suggested themselves but were found unsatisfactory. Mandelic acid, an aromatic acid, was shown in 1863 by Shotten to be completely unaltered in the urine following administration to a dog. Experiments carried out on a dog substantiated this report and large doses proved nontoxic. A preliminary report of the clinical application of mandelic acid appeared in the London *Lancet* of May 4, 1935. On this favorable report, we obtained mandelic acid.<sup>8</sup> We are now reporting our clinical experience with fifty cases of pyuria treated by mandelic acid, as prescribed by Rosenheim.

The results obtained indicate that there is a definite value in the drug, superior to all other forms of medication in urinary infections. In a surprisingly large number of cases in which a highly acid urine was obtained, the results were most gratifying. Most of the failures could be readily explained.

Patients with suprapubic tubes, retention catheters, sinuses, and so on, were improved but were not made bacteria and pus free. Cases of alkali-encrusted cystitis failed to yield because of the persistent alkaline urine. The condition of patients with retarded flow of urine, such as pyonephrotic kidneys and hydro-ureters, improved wonderfully with the administration of mandelic acid. In the preoperative prostatic cases the results were favorable but not always completely effective. Those cases in which a  $p_H$  5 was obtained cleared up promptly in most instances. Postoperative transurethral cases have responded favorably but much more slowly than cases of pyelitis.

Apparently the drug is most effective against the colon bacillus and less effective against the staphylococcus, *Bacillus proteus* and *Bacillus pyocyaneus*. Recurrence of pus and bacteria, after discontinuance of the medicine, occurred in some instances but yielded again promptly when again administered. Those negative to culture are more likely to remain so than those negative only to pus. In no instance have we noted any toxic effect or impairment of function during the use of the drug.

The treatment has been conducted in the following way: The urine was examined microscopically to determine the amount of pus and the morphologic appearance

of the infecting organism. Cultures of urine aseptically collected by catheterization were made prior to and following treatment: The acidity of the urine was determined by nitrazine paper (Squibb) and nitrazine colorimeter charts, which offer a very simple and clinically satisfactory method. The patient was immediately placed on an acid-ash diet and given two ammonium chloride tablets, 0.5 Gm., four times daily. The acidity of the urine was tested daily and when a  $p_H$  of 5.5 or better was attained, which usually occurred in twenty-four hours, mandelic acid was prescribed in the following formula: mandelic acid 48 Gm., sodium bicarbonate

TABLE 1.—*B. Coli* Infections

Case	Days of Treatment	pH of Urine	At End of Treatment		Diagnosis
			Culture	Microscopic Appearance	
1	9	4.5	Sterile	Negative	Chronic pyelitis
2	6	5.0	Sterile	Negative	Postoperative prostatectomy
3	4	4.5	Sterile	Negative	Acute cystitis
4	9	5.0	Sterile	Negative	Chronic cystitis; prostatic hypertrophy
5	11	4.5	Sterile	Negative	Nephrolithiasis and ptosis of right kidney
6	5	4.5	Sterile	Negative	Chronic pyelitis
7	5	5.5	Sterile	Negative	Cystitis; diverticula
8	9	4.5	Sterile	Negative	Postoperative prostatectomy, cystitis
9	9	5.0	Not sterile	Negative	Chronic pyelitis; hypertrophy of prostate
10	20	5.0	Unidentified rod	Negative	Pyelitis
12	7	5.0	Sterile	Negative	Acute cystitis
13	14	4.5	Not sterile	Negative	Hypertrophy of prostate; 10 oz. residual
14	7	5.0	Sterile	Negative	Chronic pyelitis
17	9	4.5	Not sterile	Negative	Chronic cystitis
18	7	4.5	Sterile	Negative	Acute cystitis
19	8	4.5	Sterile	Negative	Chronic pyelitis
22	14	5.0	Not sterile	Negative	Chronic pyelitis
26	19	4.5	Not sterile	Negative	Chronic cystitis, postoperative resection
27	6	5.5	Sterile	Negative	Chronic pyelitis
32	3	4.5	Sterile	Negative	Chronic pyelitis
33	3	4.5	Sterile	Negative	Hydronephrosis
34	5	4.5	Sterile	Negative	Vesical diverticula
35	12	4.5	Sterile	Negative	Pyonephrosis, kinked ureter
36	6	5.5	Sterile	Negative	Acute pyelonephritis
37	3	5.0	Sterile	Negative	Pyelitis, left kidney
38	6	5.0	Sterile	Negative	Pyelitis
40	9	5.5	Sterile	Negative	Pyelitis
41	9	5.0	Sterile	Negative	Hypertrophy of prostate, urinary retention
42	11	5.0	Sterile	Negative	B. is viridans
43*	5	5.5	Strep. viridans	Improved	
44	6	4.5	Sterile	Negative	Chronic cystitis, stricture
45†	7	4.5	Negative	Negative	Pyelitis
46	24	4.5	Not sterile	Negative	Postoperative prostatic resection
47	18	7.0	Not sterile	Improved	Multiple diverticula, stricture
48	4	5.0	Sterile	Negative	Pyelitis
49	10	4.5	Sterile	Negative	Pyonephrosis, right
50	2	5.0	Sterile	Negative	Chronic cystitis

\* Patient died of *Streptococcus viridans* septicemia.  
† Five years of age.

25.6 Gm., distilled water 480 Gm. A flavoring syrup to satisfy personal preference was added. In some cases nausea, diarrhea or dysuria occurred. This we considered to be due to the ammonium chloride rather than to the mandelic acid, since in changing to sodium biphosphate the mandelic acid could be continued. Wherever an alkaline condition persisted, a careful recheck of the food taken often disclosed the inclusion of orange or lemon juice, spinach, beans, molasses or olives in the diet. When these were removed and the acidifying agent increased, the proper  $p_H$  was established. The medication was continued in most cases for a week following the finding of a negative urine. If a recurrence developed the regimen was repeated.

Rosenheim, in a personal communication, states that he has been using the ammonium mandelate recently, which makes the urine acid without the necessity of using ammonium chloride. However, sodium mandelate

6. Cook, E. N., and Braasch, W. F.: Further Studies on the Use of Ketogenic Diet for Bacilluria, *J. Urol.* 33: 583 (June) 1935.  
7. Rosenheim, M. L.: Mandelic Acid in the Treatment of Urinary Infection, *Lancet* 1: 1032-1037 (May 4) 1935.  
8. The entire material has been supplied by the Mallinckrodt Chemical Company, St. Louis, through the Johannes-Tate Pharmacy.

and ammonium mandelate are quite hygroscopic and decompose. This is particularly true of ammonium mandelate. The mandelic acid is quite stable and the most convenient form for the druggist.

The results obtained in some cases of chronic pyuria have been remarkable. Cloudy urine that has resisted all forms of medication has become crystal clear in four or five days. A brief citation of a few will convey the favorable impression which we have received with its use.

Mr. J. S. S. of Cairo, Ill., had a suprapubic prostatectomy performed in 1926 and always thereafter had pus in the urine provoking episodes of epididymitis or outbreaks of other

4.5, no pus, no bacteria and culture negative. Never before have we experienced such an early clearing up of urine following transurethral work.

The acute cases of pyelitis and cystitis are affected very promptly, as shown by the following:

Miss M. M., aged 22, complained of frequency and pain on urination, with urgency and pain in the left renal region. The day of the administration of the drug, July 12, the urine was acid, with a  $pH$  of 5.0. The pus was 3 plus, the micro-organism *B. coli* 2 plus, and red blood cells 1 plus. July 15, three days later, the urine was clear with no pus or bacteria microscopically examined and the culture was negative. She was dismissed July 19 with relief from all symptoms.

An analysis of the accompanying tables shows thirty-seven cases of *Bacillus coli* infection, embracing acute and chronic pyelitis, pyelonephritis, vesical diverticula, nephroptosis, renal calculus, prostatic hypertrophy with retention and cystitis. All these became microscopically clear under the treatment. Seven yielded positive cultures.

The average number of days of treatment required to produce negative urines was 7.1. The seven cases of coccic infections, although improved, were not made sterile. This group is too small to conclude definitely that this organism is altogether resistant, especially when they are reported as being affected in vitro.

Of the six cases of *Bacillus proteus* infection, only one was made sterile. The *proteus* organism, we find, is most resistant in the urinary tract. Eighty-one per cent of all colon infections treated resulted in sterile cultures. Practically all cases improved symptomatically and the urines became less cloudy. We conclude from this survey that a urinary infection of a colon bacillus type, in which a  $pH$  of 5.5 is obtained, may be expected to clear up with the administration of mandelic acid within four to twelve days.

It is highly important to emphasize that all these patients were subjected to careful urologic study and the original causative factor in producing the pyuria was recognized and treated in the realization that the

TABLE 2.—*B. Proteus* Infection

Case	Days of Treatment	$pH$ of Urine	At End of Treatment		Diagnosis
			Culture	Microscopic Appearance	
23	25	Alk.	Not sterile	Not improved	Chronic cystitis
24	21	4.5	Not sterile	Not improved	Chronic cystitis
29	10	5.5	Not sterile	Not improved	Chronic pyelitis, prostatic hypertrophy
30	13	4.5	Not sterile	Not improved	Chronic cystitis following removal of bladder stones
31	15	5.0	Not sterile	Improved	Chronic cystitis, post-operative prostatectomy
39	6	5.0	Sterile	Negative	Pyelitis, <i>B. proteus</i>

urinary infection. All forms of urinary antiseptics and dilutions failed to clear the urine. Mandelic acid was administered and in four days the urine was grossly and culturally negative.

Mrs. W. G. C., aged 69, came from Washington, D. C., for treatment of a chronic cystitis and trigonitis. Undernourished, hampered with sinusitis and chronic bronchitis, she resisted all efforts to stamp out this persistent pyuria. In five days after the administration of mandelic acid, the urine became clear and urinary symptoms improved. The urine, cultures of which five days previously yielded *B. coli* in abundance, was found normal and the patient returned home within ten days.

In March 1934 we performed a right nephropexy on Mrs. E. B., of East St. Louis, Ill., which relieved her attacks of right renal colic, but later she became afflicted with a left pyelitis and cystitis, which persisted unrelentingly with symptoms of frequency, urgency, and bearing down perineal pain. Her teeth were examined and treated, the tonsils removed and various shock medications, including typhoid serum and neoarsphenamine, administered, but the symptoms persisted. The urine from the left kidney showed pus 2 plus, *B. coli* 3 plus. She was given ammonium chloride and mandelic acid and within four days the urine was clear of pus and bacteria, with a  $pH$  of 4.5 and alleviation of symptoms.

Mr. R. S. D., aged 38, had bilateral pyonephrosis with right renal calculi and persistent pyuria since first seen in 1932; the organism was *B. coli*. Since each kidney had a retention of about 20 cc., this case offered a good example of what effect the medication would have on a retarded flow of urine. The mandelic acid was started June 30, and on July 13 the urine was clear and negative to culture. The patient states that he feels much better and does not tire as easily. The urine was still clear one month after treatment.

Mr. B. F. E., aged 62, had hypertrophy of the prostate gland, causing 2½ ounces (75 cc.) of residual urine. The patient was first seen June 26, 1936, when the urine was alkaline with pus 2 plus and *B. coli* 3 plus, the culture showing numerous colonies of *B. coli*. The temperature ranged up to 101 F. Medication was started the same day. Five days later the temperature was normal, the urine showing only an occasional pus cell although the culture still showed colonies of *B. coli*. A transurethral prostatectomy was performed on July 2 and the mandelic acid resumed the next day. The catheter was removed the third day and the patient completely emptied his bladder, voiding very cloudy urine. August 12, however, the urine was clear. The laboratory reported the  $pH$

TABLE 3.—*Staphylococcic* Infections

Case	Days of Treatment	$pH$ of Urine	At End of Treatment		Diagnosis
			Culture	Microscopic Appearance	
11	17	6.0	Not sterile	Improved	Postoperative transurethral resection
16	9	6.5	Not sterile	Not improved	Bilateral nephrolithiasis
20	15	Alk.	Not sterile	Not improved	Alkaline incrustations
21	23	4.5	Sterile	Not improved	Pelvic vesical sinus
25	15	5.0	Not sterile	Improved	Chronic cystitis, post-operative prostatectomy
28	13	5.5	Not sterile	Improved	Nephrolithiasis
15	12	5.5	Unclassified	Improved	Cancer of prostate

pyuria was only one manifestation of the trouble. The real value of the drug will be lost and actually be prejudiced if it is indiscriminately used before the diagnosis is made. Pyuria is only a "physical symptom" such as fever, and any physician who is content to give relief only temporarily is a questionable practitioner. Because of the apparent effectiveness of mandelic acid in inhibiting the growth of *B. coli*, this report should in no way be construed as indicating it as a panacea for all urinary ills; but we wish to show by the case reports that pyuria is the end product of many com-

plicated diseases the cure of which calls for more than the administration of mandelic acid by mouth. Manifestly renal stone, kinked ureter due to movable kidney, prostatic hypertrophy, bladder diverticula, and stricture of the ureter or urethra—all found in the group studied—required more than the administration of mandelic acid; but mandelic acid was found most helpful in decreasing operative risk, where indicated, making the patient more comfortable and shortening the length of illness.

It is evident from the report of Dr. Anson Clark, who performed experimental work on dogs, that caution should be exercised in giving the proper dose and in cases of lowered renal function.

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## MANDELIC ACID IN THE TREATMENT OF INFECTIONS OF THE URINARY TRACT

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In recent years the treatment of infections of the urinary tract has taken on a more scientific aspect. The older empirical methods which were efficacious in alleviating symptoms have been supplanted by newer forms of treatment which have a logical and predetermined basis and the value of which has been proved.

Since Shohl and Janney<sup>1</sup> demonstrated that the growth of *Escherichia coli* was inhibited in urine at a  $p_H$  of 4.6 to 5.0, the question of combating infection of the urine has come steadily to the foreground. Clark<sup>2</sup> in 1931, searching for a means of acidifying the urine, used the ketogenic diet. Early observations soon revealed that a secondary factor was needed besides high acidity if bacillary infections of the urinary tract were to be eradicated. Fuller<sup>3</sup> proved this secondary factor to be beta-hydroxybutyric acid. Helmholz and Osterberg<sup>4</sup> have definitely shown that a certain concentration of this acid, which is an end product of the ketogenic diet, is needed along with a certain  $p_H$  of urine if negative cultures of urine are to be obtained.

As the ketogenic diet requires the most careful and skilful management if good results are to be obtained,<sup>5</sup> and as it often causes distressing general and gastrointestinal symptoms, a vigorous search has been going on for a simpler and more easily managed means of treatment which would obtain the same results. When beta-hydroxybutyric acid is given by mouth to patients on a normal diet, it is oxidized in the body to carbon dioxide and water. Rosenheim,<sup>6</sup> after experimenting with similar organic acids, found that mandelic acid could be given by mouth and could be recovered in the

urine unchanged. Helmholz and Osterberg<sup>7</sup> carried on a series of experiments in the laboratory and demonstrated very definitely that the usual bacilli found in the urinary tract were definitely killed by a 0.5 per cent solution of mandelic acid at a  $p_H$  of 5.5. As with beta-hydroxybutyric acid, a lower  $p_H$  will not require such a high concentration of the acid.

During the past twelve months we have been using mandelic acid or its derivatives with varying results. Our earlier work revealed its efficacy in approximately 50 per cent of cases, but later experience has shown that, with more careful management, better results may be obtained. We have given a 10 per cent solution of sodium mandelate, the dose being 1 ounce (30 cc.) before meals and at bedtime. On this regimen the patient ingests 12 Gm. of the drug daily. In order to render the urine acid, either ammonium nitrate or ammonium chloride was given in doses of from 4 to 6 Gm. each day. Patients were instructed to take only five glasses of fluid daily in order not to dilute the urine. The results obtained were as follows: Seventy-five patients were given the drug, and the urine of sixty-one of them, or 81 per cent, was rendered sterile.

In an attempt to obtain the desired acidity of the urine without using an additional acidifying drug, Holling and Platt<sup>8</sup> suggested the use of the ammonium salt of mandelic acid and reported good results in four cases. In one of these cases they found that the addition of ammonium chloride was required to obtain a satisfactory  $p_H$ . We have given a 10 per cent solution of the ammonium salt of mandelic acid to five patients, and in all but one case a satisfactory  $p_H$  was obtained without the addition of an acidifying drug. Another salt of mandelic acid is ethanolamine mandelate, and this too is designed to eliminate the use of a secondary drug. Ethanolamine mandelate was given to five patients, and negative cultures were obtained in three of these cases. In one case an acidifying drug had to be added.

Recently the ammonium salt of mandelic acid has been prepared in a 40 per cent syrup solution, and this has proved very efficacious. It was given to twelve patients with bacillary infections of the urinary tract, and in eleven of the cases the urine was sterilized. One patient required ammonium nitrate to bring about the desired acidity of the urine.

Offhand this form of therapy may seem extremely simple. The physician can write a prescription for mandelic acid and an acidifying drug and the cure is assured. This is not actually the case, however, and unless the physician is alert in his management of these patients and checks the  $p_H$  of the urine daily, he will be greatly disappointed in the results he obtains.

In using the ketogenic diet, the diet itself aids greatly in acidifying the urine; with mandelic acid therapy this factor is lacking, and, if the mandelate plus the acidifying drug will not bring about a high acidity, other means must be instituted. In a few cases hydrochloric acid by mouth has been sufficient to increase acidity; in other cases an acid-ash diet has been tried, with varying results, and in still other cases the addition of the ketogenic diet has been necessary before the  $p_H$  was low enough and bactericidal urine was obtained.

From the Section on Urology, the Mayo Clinic.  
1. Shohl, A. T., and Janney, J. H.: The Growth of *Bacillus Coli* in Urine at Varying Hydrogen Ion Concentrations, *J. Urol.* **1**: 211-228 (April) 1917.  
2. Clark, A. L.: *Escherichia Coli* Bacilluria Under Ketogenic Treatment, *Proc. Staff Meet., Mayo Clin.* **6**: 605-608 (Oct. 14) 1931.  
3. Fuller, A. T.: The Ketogenic Diet: Nature of Bactericidal Agent, *Lancet* **1**: 855-856 (April 22) 1933.  
4. Helmholz, H. F., and Osterberg, A. E.: The Concentration of Beta-Oxybutyric Acid and the  $p_H$  in Bactericidal Urine, *Proc. Staff Meet., Mayo Clin.* **9**: 46-48 (Jan. 17) 1934.  
5. Cook, E. N., and Brasch, W. F.: Further Studies on the Use of the Ketogenic Diet for Bacilluria, *J. Urol.* **33**: 583-588 (June) 1935.  
6. Rosenheim, M. L.: Mandelic Acid in the Treatment of Urinary Infections, *Lancet* **1**: 1032-1037 (May 4) 1935.

7. Helmholz, H. F., and Osterberg, A. E.: The Rate of Excretion and Bactericidal Power of Mandelic Acid in the Urine, *Proc. Staff Meet., Mayo Clin.* **11**: 373-377 (June 10) 1936.

8. Holling, H. E., and Platt, Robert: Mandelic Acid and Ammonium Mandelate in the Treatment of Urinary Infections, *Lancet* **1**: 769-771 (April 4) 1936.

While mandelic acid therapy may supplant treatment with the ketogenic diet in approximately 75 per cent of the cases, it cannot replace it entirely. We believe the main reason for this is the question of maintaining high acidity of the urine, as discussed in the previous paragraph. In conjunction with the ketogenic diet, mandelic acid will be extremely helpful. Often with the diet alone we were able to gain satisfactory acidity, but the concentration of beta-hydroxybutyric acid was not great enough to render the urine bactericidal. The addition of mandelic acid salts in this group of cases has already proved of great value. In one case in which diabetes insipidus was present as well as a urinary tract infection and the patient was on the ketogenic diet, extreme dilution of the urine prevented a sufficient concentration of beta-hydroxybutyric acid to obtain the desired results. The addition of sodium mandelate while the patient was still taking the diet sterilized the urine. Here, either form of therapy alone would have failed but the two used together were highly successful.

The urologic indications for the use of mandelic acid are the same as those for use of the ketogenic diet. To date, bacillary infections are readily attacked with this form of therapy while coccic infections are not.

As with the ketogenic diet, treatment of bacilluria associated with stone, stasis or marked prostatitis will be more difficult and will require the same thoroughness. The contraindications to the use of mandelic acid are also similar to the contraindications to the use of the ketogenic diet. However, in certain cases in which patients have gout, gastric or duodenal ulcer, or diabetes mellitus, when the use of the ketogenic diet is impossible, we believe that mandelic acid will be extremely beneficial and cause no distressing results. Helmholz and Osterberg have already shown in studies on animals that excessive doses of the drug will destroy the renal function and even produce death. In a series of normal individuals who were given the drug to determine the normal rates of excretion, determination of urea in the blood and of phenolsulfonphthalein excretion in the urine were made before the patients took the drug and after a week's ingestion of 12 Gm. daily. At the end of the week the blood urea was found to be increased in all cases; the percentage of excretion of phenolsulfonphthalein was decreased. Whether or not this apparent decrease in renal function is attendant on a lowered intake of fluid or can be attributed to the drug itself we cannot say, but certainly we feel that one should be cautious in using the drug for patients who already have a reduced renal function and, particularly, for the aged. Further studies along these lines are now being conducted, and until experience with the use of this drug is greater, it must be used with care.

Most of our patients have taken mandelic acid or its derivatives without any untoward effects, less than 1 per cent having experienced any nausea or vomiting. Approximately one in ten have noticed some diarrhea, but in most of these cases it was of a mild character; a few patients, however, did have from eight to fourteen stools a day and administration of the drug had to be stopped for a while. Its administration was resumed again later in decreased dosage without producing any ill effects.

In conclusion, we again wish to call attention to the importance of close observation and careful management of patients being treated with mandelic acid if the desired results are to be obtained.

## EXPERIENCES WITH AMMONIUM MAX- DELTATE IN URINARY INFECTIONS

A REPORT OF RESULTS OBTAINED IN SIXTEEN CASES  
OF VARIOUS TYPES OF INFECTIONS REGARD-  
LESS OF THE EXISTING PATHOLOGIC  
CONDITION

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The medical profession is occasionally presented with a new urinary antiseptic before sufficient time has elapsed to permit competent observers to test adequately its therapeutic results. For that reason some drugs are used indiscriminately in all types of urinary infection instead of being restricted to the specific infections for which they were originally intended. Through this practice they sometimes fall into disrepute because of seemingly poor results.

At the present time we are apparently on the threshold of another such possibility. Recently some well known research workers through a logical sequence of events and experiments have presented the medical profession with an oral medication that has given startling results in certain types of urinary infection. Yet it has not been sufficiently investigated by controlled clinical and laboratory study to warrant its general distribution and use under the unrestricted title of "urinary antiseptic." Such a general term will undoubtedly bring it into early disrepute because of failure in some cases even if it should not cause untoward results and complications.

Clark and Helmholz<sup>1</sup> in October 1931 called attention to the value of ketogenic treatment in various urinary infections, and the Nesbit<sup>2</sup> modification of the ketogenic diet is well known. It is this modification that I have followed as a routine because of its greater simplicity and likewise because it is better tolerated. Although the ketogenic diet has given remarkable results in bacillary infection of the urinary tract, it is not entirely satisfactory because of the strict regimen and the nauseating ingredients. This often causes the patient to become lax in its routine and necessitates hospitalization in most cases. It then becomes an economic problem in order to obtain the desired results.

Just as the discovering of the bacteriostatic properties of beta-hydroxybutyric acid led to the use of the ketogenic diet in urinary infections,<sup>3</sup> so Rosenheim<sup>4</sup> and others followed through in their investigations to produce a like condition in the urine as that which resulted from the use of the ketogenic diet. It was known by these men that beta-hydroxybutyric acid could not be used by oral administration because it was metabolized by the body. The use of other organic acids in the treatment of urinary infections was tried without effect. Then Rosenheim reported that mandelic acid passed through the body unchanged. When excreted in sufficient concentration in a urine with an acidity below a  $pH$  of 5.3, it was sufficiently bacteriostatic to be of practical value and comparable to the use of the ketogenic diet.

Read before the Detroit Branch of the American Urological Association at Ann Arbor, Mich., Oct. 24, 1936.

1. Clark, A. L., and Helmholz, H. F.: *Proc. Staff Meet., Mayo Clin.* 6: 605 (Oct. 14) 1931.

2. Nesbit, R. M.: *Urologist's Correspondence Club Letters* 2, Aug. 7, 1935.

3. Fuller, A. T.: *Lancet* 1: 855 (April 22) 1933.

4. Rosenheim, M. L.: *Lancet* 1: 1032-1037 (May 4) 1935.

Later in December 1935, Lyon and Dunlop<sup>5</sup> confirmed these observations and called attention to the use of mandelic acid salts.

In April 1936, Holling and Platt<sup>6</sup> reported twenty-nine cases treated with mandelic acid salts and suggested the use of the ammonium salts as preferable. Previously in the use of mandelic acid as such, sodium bicarbonate was given as a neutralizing agent or buffer. This in turn required the administration of ammonium nitrate or ammonium chloride in order to maintain the acidity of the urine below a  $p_H$  of 5.3, or the degree necessary to produce the best results. This combination often caused considerable gastric distress, nausea and sometimes vomiting of the drug.

In July of this year, Cook of the Mayo Clinic, in a letter to the Urologist's Correspondence Club, reported the use of 40 per cent solution of ammonium mandelate in five cases of urinary infection. Negative cultures were obtained in all cases. These patients were given an alkali-free diet, and their fluid intake was limited to one liter daily. Interested by this report, we decided to try it. We were confronted, however, with the fact that such a drug was not available commercially in the United States, though it was available in England in the form of sodium mandelate. Through the cooperation of a local chemist mandelic acid was obtained, and from this he made up ammonium mandelate, but to make it more palatable a 40 per cent elixir was prepared. This preparation has been well tolerated by all our patients. At the present time several of the larger pharmaceutical houses either have mandelic acid preparations on the market or are preparing to announce them.

We have used ammonium mandelate in various types of urinary tract infections both in our office and in our hospital practice, and we offer a summary of the results obtained in sixteen cases which we have treated.

In using this treatment the patients are given 2 drachms of the 40 per cent elixir of ammonium mandelate, which amounts to 3 Gm. (7.5 cc.) of mandelic acid, four times daily in a small quantity of water. The total fluid intake in twenty-four hours should not exceed 1 liter of fluid, actually measured at the beginning of each twenty-four hours and evenly distributed to maintain a balanced concentration. The patient, if not hospitalized, is cautioned against the use of all other drugs, also foods and fruit juices, which might readily produce an alkaline urine. No other restrictions seem necessary. If the patient is not physically incapacitated he may carry on his usual occupation. We have maintained, however, a close check on each patient with a daily cell count of the urine and a  $p_H$  determination. This observation is obviously necessary for proper control of the case.

One of the fundamental principles in the treatment of urinary tract infections is the elimination of existing obstructive lesions and the establishment of free drainage. The first case in our series presented such a marked degree of renal ptosis and obstruction, as shown by the pyelogram, yet such striking results were obtained on ammonium mandelate therapy, that I will report it in detail. I am doing this so that other physicians also will be favorably impressed as my associates and I were, for this case offered us moral support in the face of failures encountered in some other types of infection.

## REPORT OF CASES

CASE 1.—A white woman, aged 67, who was very emaciated and confined to her bed, was first seen on Aug. 4, 1936, because of pain in the region of the bladder and urethra, frequency of urination accompanied with burning, and pain in the back, particularly over the right lumbar region. These symptoms had been present with increasing intensity during the previous several months. Cystoscopic examination revealed the bladder urine to be turbid with pus. A large amount of grayish debris was hanging from the bladder walls, and the blood vessels of the bladder mucosa were markedly congested. On ureteral catheterization, clear urine was obtained from the left kidney while turbid urine containing approximately 200 pus cells per low power field was obtained from the right kidney. The cultures from the right kidney and bladder yielded colon bacilli. The left kidney culture was sterile. Pyelography demonstrated a normal left kidney and a large, hydronephrotic, ptosed right kidney. The ptosis was of such a character that the pelvis did not have free drainage from the position in which it reposed. More than 150 cc. of purulent urine was aspirated through the right ureteral catheter before the contrast medium

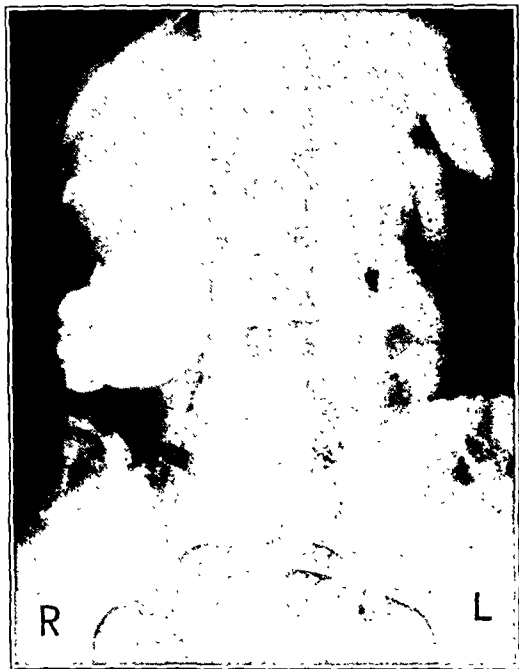


Fig. 1 (case 1).—Right pyelo-ureterogram showing marked dilatation and ptosis, and obstruction at the ureteropelvic junction.

was injected for pyelography. The ureteral catheter was fixed in place for drainage and pelvic lavage of the right kidney was carried out at frequent intervals over a period of several days. Various urinary antiseptics were given by mouth but this treatment proved valueless, for when the catheter was removed seven days later the symptoms recurred. An intravenous urogram August 12 showed the right kidney to have fair function but no change in the hydronephrosis. Nephrostomy, nephropexy and nephrectomy were considered but, owing to the poor general condition of the patient and her aversion to surgery, we decided to try the ammonium mandelate therapy first. The treatment was started August 24 at which time the urine contained from 15 to 20 pus cells per high power field, uncentrifuged urine. August 26 a voided specimen showed 8 to 10 pus cells per high powered field. September 1 the cell count was about the same, with some granular casts being present. September 10, sixteen days after starting the therapy, 2 pus cells per high power field were found. The urinary symptoms had disappeared except for some burning on urination. The  $p_H$  of the urine had varied from 4.5 to 5.3 throughout the treatment. September 15, twenty-one days after the medication was started, there were but slight urinary symptoms and the general condition was improved. The remarkable absence of pus in the

5. Lyon, D. M., and Dunlop, D. M.: *Brit. M. J.* 2: 1096 (Dec. 7) 1935.

6. Holling, H. E., and Platt, Robert: *Lancet* 1: 769-771 (April 4) 1936.

bladder urine made us skeptical of a possible painless blocking of the right ureter. We therefore catheterized the right kidney and found no pus in the urine from this side and a sterile culture was obtained. Examination of the urethra showed it to be inflamed and edematous, this apparently being the cause of the burning on urination. For the last month the patient has been up and around her home without pain or symptom and the urine is still free of pus.

CASE 2.—As the results in our first case were so striking and were evident so early in the treatment, we felt that we might try it in a mixed type of infection. An elderly, prostatic patient two years previously had suffered an apoplectic attack, which confined him to his bed with a right sided paralysis, difficult speech and acute retention of urine. At the time we saw him, during the early days of his paralysis, the urine was purulent and a retention catheter was fixed in place. After prolonged hospitalization, the patient was able to be up and about, unassisted. The urine, however, remained turbid with infection and he was under constant treatment of bladder irrigations and oral urinary antiseptics. His prostate was markedly enlarged. It was smooth, firm and not sensitive. No nodules were palpable. Cystoscopic examination showed the

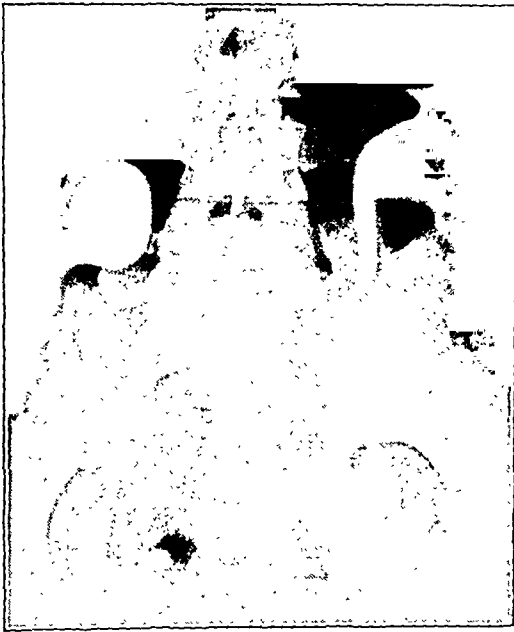


Fig. 2 (case 15).—Upright pyelo-ureterogram (retrograde) showing ptosis and obstruction with dilatation of right kidney pelvis and ureter.

blood vessels of the bladder to be congested and the bladder walls trabeculated. There was a massive intravesical encroachment of both lateral lobes of the prostate. Because of the patient's general condition we had advised against operative procedure. Aug. 31, 1936, we started this patient on ammonium mandelate therapy, at which time the urine contained 150 pus cells per high power field and the culture of the urine yielded staphylococci. September 2 the amount of pus had not changed. September 8 the pus had decreased to from 50 to 60 pus cells per high power field but there was present also some 60 to 75 red blood cells. The patient also was complaining of considerable gastric distress and loss of appetite. It was learned that he was taking the ammonium mandelate undiluted, which may have accounted for the severe gastric distress; but it would not account for the blood cells in the urine. The  $pH$  value was maintained at 5.5 or below. September 10 the condition was better. The urine contained around 40 to 50 pus cells and about the same number of red blood cells per high power field. September 13, two weeks after treatment was started, the patient had taken 16 ounces (475 cc.) of the elixir of ammonium mandelate. A check of the urine showed 150 pus cells present per high power field. There was an occasional red blood cell present. This was thirty-six hours after the medication had been stopped, and the  $pH$  of the urine had risen to 6.0. The

following day the patient had an acute retention of urine and in general had lost ground in physical strength throughout the course of the treatment. Several days of palliative treatment were given. A retention catheter was used, but the patient was unable to tolerate it and a cystostomy was done for relief. A transurethral resection is now contemplated, since suprapubic drainage is established. This patient, we feel, was not benefited by the treatment and complications were encountered.

CASE 3.—A white man, aged 72, was first seen Jan. 22, 1936, because of urinary obstruction, which had been present in an increasing degree for the past ten years. During the previous three months occasional attacks of hematuria occurred. Rectal and cystoscopic examination revealed a large prostate, grade 3 in size, with an 8 ounce (235 cc.) residual urine. Many small stones were present in the bladder and marked edema of the floor was present also. A two stage suprapubic prostatectomy was performed. Convalescence was slow but uneventful. He left the hospital seven weeks after admission and returned to the office for further treatment. His condition improved rapidly. He voided freely; nocturia disappeared. He regained his weight and strength and returned to his work. There were no symptoms of any type and no residual urine, yet in spite of bladder irrigations and prolonged use of various urinary antiseptics the urine remained turbid with pus and colon bacilli. There have been no symptoms of kidney infection at any time. An x-ray film of the kidney, ureter and bladder was negative for stone shadows. Ammonium mandelate therapy was started August 22, at which time the urine contained colon bacilli and from 25 to 30 pus cells per high power field and a  $pH$  of 7.0. August 24, two days after treatment was started, the pus had decreased to an average of 18 cells per high power field. September 1 it was reduced to from 2 to 4 cells per high power field. September 9, two days after the treatment had been stopped, it contained from 8 to 12 pus cells per high power field and, on staining, various types of bacteria were found. Through the course of treatment the  $pH$  remained at 5.0, while a few days after treatment was stopped the  $pH$  rose to 7.5. This is a case which was undoubtedly aided by the mandelic acid therapy. The colon bacilli were eliminated while other organisms appeared later. This patient lives 50 miles from the city and it is difficult to maintain him on a routine which we desire, but I believe that, if this patient is placed on treatment under different circumstances for a sufficient period, his condition will be greatly improved.

CASE 4.—A white woman, aged 27, was first seen Aug. 1, 1936, on account of pain in the right kidney region, which was intermittent in character. These symptoms had been present for two years but had not been severe until three months previously. Cystoscopy and pyelography at this time showed a normal bladder with a moderately dilated right kidney pelvis, the condition apparently being due to a constriction at the ureteropelvic junction. Urine specimens from the kidney produced negative cultures, and an upright pyelo-ureterogram showed no ptosis of the kidney. Following the examination, the patient's symptoms were greatly aggravated. There was an elevation of temperature, and pus and blood appeared in the urine. We felt that we had introduced an infection into a partially blocked kidney. She was kept at bed rest on urinary antiseptics and forced fluids. After a period of two weeks when she was feeling better we dilated the right ureter to a size 14 F. Urine obtained from the left kidney at this time was negative, while the right side showed pus and staphylococci. After this dilation there was again an aggravation of symptoms, which subsided after a few days of bed rest and urinary sedatives, but the original symptoms persisted. We started giving ammonium mandelate August 29, at which time a specimen of urine showed a  $pH$  value of 6.0 and contained from 4 to 6 pus cells per high power field. The culture yielded staphylococci. During treatment the  $pH$  varied from 4.5 to 5.5. The number of pus cells ranged from 2 to 8 per high power field. After two weeks of ammonium mandelate therapy the urinary examination gave approximately the same results as the day on which it was started. In this case I feel that the therapy was of no value. After the therapy was stopped, the patient's general condition improved under forced fluids and an increased diet. This was followed by a gradual diminution of pus in the urine.

CASE 5.—This case is of interest because of its long standing history. A man, aged 61, was first seen in 1932 because of

hematuria and pyuria and symptoms of obstructive urination. These symptoms had been present at intermittent intervals over a period of several years. Cystoscopy and cystography in 1932 revealed a large intravesical prostate, marked trabeculization of the bladder with multiple small diverticula, and one large diverticulum which was practically the size of the bladder. Prostatectomy and diverticulectomy were subsequently done and the patient had a prolonged convalescence. For many weeks after leaving the hospital he was treated with bladder irrigations and urinary antiseptics but the urine persisted to be turbid. Cystoscopy revealed the large diverticulum to be absent, but the smaller ones remained about the same size. Though the patient remained well for the intervening time from 1933 to the present, the urine never changed in character. Sept. 15, 1936, he returned to the office for routine examination and it was decided to try him on ammonium mandelate. Culture of the urine showed gram-positive bacilli and diplobacilli. The  $p_{H}$  before the treatment was started was 7.0. Two days after it was started the urine was clearer than at any time in many years of the patient's memory. The  $p_{H}$  was 4.5 and there were from 4 to 6 pus cells per high power field. The patient continued on the treatment for only twelve days, as his business required a long absence from the city. Throughout his treatment the  $p_{H}$  value of the urine varied from 4.5 to 5.0. At the time of the discontinuance of the treatment the urine still contained an occasional pus cell per high power field and some bacteria were still present in a smear. This case I feel will probably go on to a possible cure when the patient returns for further treatment.

CASE 6.—The sixth case is of interest because the culture of the urine before the therapy was started contained diplococci and streptococci. A man, aged 61, was seen because of symptoms of urinary obstruction. A transurethral resection of the prostate was done June 30, 1936. He made an uneventful recovery from this. There was no residual urine. He had frequency of urination of three to four times a day and nocturia from one to two times, when seen September 19. The urine remained turbid in spite of frequent bladder lavage and oral urinary antiseptics. The  $p_{H}$  of the urine was 7.0. He was started on ammonium mandelate on this date and two days later, September 21, the urine appeared clear. There was an average of only one pus cell per high power field, and the  $p_{H}$  was 5.0. As the patient was complaining of loss of weight while on treatment and because of the apparent cure, I felt justified in stopping the therapy at this time. Five days later, however, he returned to the office and the urine was again hazy with pus and bacteria. The  $p_{H}$  was 6.0. Ammonium mandelate was resumed, and October 10 the urine was clear with a  $p_{H}$  of 5.0 and there was an average of about 1 pus cell to every two or three high power fields. October 14 the urine was sterile, but the treatment was continued for five more days. This made a total in this case of 6 ounces (180 cc.) of 40 per cent ammonium mandelate in the first course of treatment and 16 ounces (475 cc.) in the second and last series. October 22, two days after discontinuance of the drug, the patient returned to the office with a slightly hazy urine containing many bacteria and a rare pus cell. Cultures taken at this time have not yet been reported. This infection seems to show marked resistance to the treatment. At least recurrence appeared soon after the treatment was stopped. I believe that better results could be obtained in this case with the use of additional ammonium chloride to maintain the  $p_{H}$  around 4.5.

CASE 7.—A man, aged 49, seen first Oct. 2, 1936, with symptoms of acute cystitis, was hospitalized and on October 5 urologic study revealed a marked cystitis suggestive of tuberculosis. Pyelography showed slight irregularity in the minor calices of the left kidney similar to that sometimes seen in early tuberculosis. Urinalysis demonstrated many pus cells from both kidneys. Culture of the left kidney yielded staphylococci and of the right kidney diplobacilli. No tubercle bacilli were found in smears. Guinea-pigs were inoculated with separate urine specimens. The patient was placed on ammonium mandelate therapy and allowed to return to his home in another city under the supervision of his local physician. One week later the physician reported all symptoms worse and hematuria present. The therapy was discontinued and palliative measures were instituted. Seventeen days later the guinea-pigs are still alive, but not ready for autopsy; still I feel that, clinically this is prob-

ably a case of renal tuberculosis. The irritability of the urinary tract on acid treatment seems to substantiate this diagnosis.

CASE 8.—A man, aged 75 on whom a prostatic resection was done in August 1935, had a resulting residual pyuria of 20 cc. Routine treatment did not change this condition nor did the absence of treatment alter the urine. September 24 he was first given ammonium mandelate, when culture showed *Bacillus coli* present. October 19 the culture was sterile and the urine was hazy with red blood cells, which averaged 8 per high power field. Treatment was discontinued. This patient was on treatment twenty-five days. The blood appeared the last three days. The prolonged treatment was probably due to the fact that the  $p_{H}$  remained above 6.0 during the first eight days. He admitted that during the first week he was taking more than the prescribed amount of fluid.

CASE 9.—This is a case of hypertrophied prostate and diverticulum in a man, aged 71. The prostate was resected July 14, 1936, in the face of a diverticulum with a capacity of approximately 60 cc. The patient made an uneventful recovery except for the remaining pyuria, which was unaffected by treatment.



Fig. 3 (case 16).—Pyelogram showing marked dilatation and ptosis of right kidney.

*Bacillus coli* appeared in cultures from the urine October 2, and the patient was started on ammonium mandelate. Five days later the urine was clear with 1 or 2 pus cells being present per high power field. On the tenth day cultures were sterile, but from past experience treatment was continued for three more days and the patient now is on observation apparently cured, though nothing was done to the diverticulum, which was located on the floor of the bladder.

CASE 10.—This case is interesting because of the differential diagnosis. The patient was sent into the hospital by a gynecologist because of pain in the right lower quadrant and pus in the urine. He was satisfied that the right adnexa were normal. She had an appendectomy two years previously. On admission to the hospital a catheterized specimen of bladder urine was obtained and a large amount of pus was found; likewise the culture showed diplococci and diplobacilli. The patient was started on ammonium mandelate without further examination. Thirty-six hours later, as the pain still persisted and the temperature remained at 102 F., where it had been on admission, we were stampeded into doing a ureteral catheterization. This was the first case of acute pyelitis in which we had used this therapy and we were willing to be stampeded. The catheterized

urine from the kidneys showed no pus and no cultural growth from the left side, while from 30 to 35 pus cells per low power field were obtained from the right kidney and the culture showed diplococci and diplobacilli. Against advice, we removed the catheters from the kidneys and continued the mandelic acid therapy. Two days later the temperature dropped to normal. The catheterized specimen of urine from the bladder showed from 1 to 2 pus cells per high power field and a  $pH$  of 4.5. The following day the patient was allowed out of bed and on October 13, six days after the therapy was started, the patient was allowed to go home. A culture at that time was sterile. On October 22 the patient had no complaints, the temperature remained normal and the urine was free of pus.

CASE 11.—A man, aged 72, entered the hospital suffering from pain in the right lumbar region radiating inferiorly and anteriorly. Examination revealed a calculus in the right renal pelvis, another in the right lower ureter near the ureterovesical juncture and two in the left lower ureter, and one in the bladder. Each was approximately the size of a small green pea. The patient also had a hypertrophied prostate with both vesical and urethral encroachment. The ureteral and bladder calculi were delivered by cystoscopic manipulation and a trans-urethral resection of the prostate was subsequently done. The patient left the hospital with a calculus still remaining in the right renal pelvis and a urine cloudy with pus and colon bacilli. This was in June 1936. Routine treatment did very little toward clearing the urine. Ammonium mandelate was first given October 14. Five days later the urine was clear and cultures were sterile.

CASES 12 AND 13.—In these two cases we used the ammonium mandelate very closely following transurethral resection of the prostate. The first patient was a man, aged 81, and treatment was started ten days after operation while he remained in the hospital making a very slow recovery. The culture yielded staphylococci. The patient was on treatment six days without apparent change in the urine. Because of dehydration he was removed from this therapy.

The second case, in which therapy was started soon after resection of the prostate, gave a culture of *Streptococcus viridans*. Treatment was started three days after resection. Bladder irrigations were used in conjunction in both cases. On the fourth day of treatment, seven days after resection, improvement was noted but a secondary hemorrhage occurred which necessitated discontinuance of the treatment.

CASE 14.—A hospital orderly, aged 25, had a known pyuria prior to a gonococcal infection with accompanying epididymitis. He had been in the hospital ten days when I first saw him. The gonorrheal infection was in a subacute stage and the epididymitis was subsiding. Voided specimens of urine were cloudy with pus. No cultures were made but the patient was put on mandelic therapy to see if it might give any clinical results. It did. After twenty-four hours of administration of ammonium mandelate, it was discontinued because of the onset of severe urethral irritation.

CASE 15.—The next two cases are somewhat similar because they show the same pathologic type, which consists of a right sided pyelonephritis and ptosis, hydronephrotic right kidney. Both have purulent pus in the right kidney. These cases were seen on the same day. The first one, on cystoscopic examination, showed from 6 to 8 pus cells per low power field in the left kidney and about 700 or 800 per low power field in the right kidney. Both cultures yielded were colon bacilli. The pyelograms (figs. 2 and 3) reveal the type and degree of hydronephrosis and ptosis. Both cases evidently show stasis. Patient 15 entered the hospital for urologic study, after which she was started on ammonium mandelate October 1. Two days later she left the hospital and returned to the office, stating that she felt much better. The urine appeared to be much clearer in a voided specimen. The  $pH$  was 5.5. October 5, five days after treatment was started, a catheterized specimen of urine was clear. There were from 2 to 3 pus cells per high power field. The  $pH$  was 5.0. The patient stated that she had not felt as well in many weeks. October 7 the  $pH$  was 5.0 and no pus was found. October 9, which was the ninth day of treatment, sterile cultures were obtained. No pus was present in the urine. The patient had taken only 8 ounces (235 cc.) of the medication, but, because of her excellent condition, treatment was discontinued. She returned for repeated examinations and on

October 21 the urine was still free from pus, the  $pH$  was 7.0 and she stated that she felt better than she had in a long time.

CASE 16.—This is the second of the cases examined on the same day. It was stated that the pathologic condition was similar except that this patient was an older woman, aged 76, who had been ill for months. It was said that she was known to have diabetes, which makes it interesting because diabetic patients are considered to have less infection, owing to the ketone bodies in the urine. However her blood sugar was only 148 mg. and she had a one plus sugar in the urine. The pyelograms in this case show that there is even a more marked ptosis and hydronephrosis than there was in the preceding case. At the time of cystoscopy a cell count of from 8 to 10 per low power field was found in the left kidney urine and 200 or more in the right kidney specimen. Treatment was started October 1, and within seventy-two hours, without any other acidifying measures except the 40 per cent elixir of ammonium mandelate, the  $pH$  of the urine dropped from above 7.0 to 5.0 and there was only a slight haziness to the urine.

Here the case became more interesting because on the third day after treatment was started the laboratory reported on the cultures made prior to treatment. The report was *Bacillus proteus*. Chute's<sup>7</sup> warning was recalled concerning the possibility of formation of urinary calculi when attempting to acidify a proteus infection because of the urea splitting properties of this bacillus, which produces ammonia. The urine thus made more alkaline would be predisposing to the formation of calcareous deposits. However as the  $pH$  was 5.0 on the third day of treatment and the urine contained less pus, it was felt that we were justified in continuing the administration of ammonium mandelate. Seven days later the urine showed only 1 or 2 pus cells per high power field and the patient was feeling better in general, and though she had been bedfast for several weeks she was sitting up in a chair. The pain which she originally complained of in the right lumbar region had disappeared. October 13 an intravenous urogram was made. The blood chemistry showed a decrease in the sugar from 148 mg. to 120 mg. The nonprotein nitrogen decreased from 47 mg. to 35 mg. The intravenous urogram showed normal functioning of both kidneys with the same degree of dilatation and ptosis as previously seen. The urine culture is sterile and no pus is present in the specimen. She was taken off all therapy and given an unrestricted diet. She left the hospital October 20 with an increase in weight of 10 pounds (4.5 Kg.).

#### SUMMARY

The results obtained with the use of ammonium mandelate in treating sixteen cases of various types of urinary infection, regardless of the existing pathologic condition, may be thus summarized:

1. Seven cases of *Bacillus coli* infection resulted in six apparent cures and one partial cure with complications of hematuria in one case. There were no failures.

2. Three cases of staphylococcus infection resulted in three failures. One complicated with hematuria was followed by acute retention in a prostatic case with previous cerebral involvement.

3. One case of *Streptococcus viridans* infection was slightly improved.

4. One case of mixed infection of diplococcus and *Streptococcus viridans* resulted in apparent cure but there was a recurrence.

5. One case of diplobacillus infection resulted in apparent cure.

6. One case of mixed infection of staphylococci and diplobacilli and possibly tubercle bacilli resulted in failure with aggravation of all symptoms.

7. There was one mixed infection with gonorrhea in which treatment was not tolerated.

8. One case of *Bacillus proteus* infection resulted in apparent cure.

7. Chute, Richard: Urologist's Correspondence Club Letters, 3, March 23, 1936.

COMMENT

Rosenheim, in his study of mandelic acid treatment, concludes: "Mandelic acid appears to be effective in cases of urinary infection unassociated with urinary obstruction." It would seem that the explanation of apparent cure resulting in three cases, here reported, of marked obstruction is the fact that the drug is held longer in situ, thus giving its bacteriostatic powers longer time in which to function. The same reasoning seems logical in the cases of diverticula of the bladder in which such good results were obtained.

Because of the short period of time in which these cases have been observed, the good results have been designated as apparent cures only. Experience has shown recurrence in some cases.

Because of the increasing distribution of this drug for general use, without warning of possible complications, attention should be called to the complications encountered in this series of cases.

NOTE.—Since the presentation of this paper, personal communications from three other urologists, using ammonium mandelate from different pharmaceutical houses, have reported four cases of hematuria during its use.

1052 Edison Building.

AIR-BORNE INFECTION

SANITARY CONTROL

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AND

MILDRED WEEKS WELLS, M.D.

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In view of the proved possibility of infectious matter being carried by air, reasonable efforts to free air supplies from living micro-organisms are justified in the light of general sanitary principles. The great reduction of intestinal disease through water purification since the turn of the century might prompt us to hope that some of the diseases transmitted through discharges from the respiratory tract may be checked by methods of controlling air supplies. A study of the effect of ventilating factors on the dispersion and viability of micro-organisms suspended in air<sup>20</sup> has already disclosed the efficacy of certain destructive agencies.

Experiments on the disappearance of *B. coli* in the recirculated air of an air-conditioned room were conducted as a preliminary to the investigation of textile mill humidification referred to previously.<sup>12</sup> *B. coli* seemed to disappear much more rapidly from air when the spray humidifier was operating than when the air was recirculated without the use of the spray. Further tests showed that the reduction in the number of bacteria did not take place in the spray chamber but after the air had returned to the room, indicating that humidity might increase the death rate of *B. coli* in the air. Increasing relative humidity from 45 to 90 per cent more than doubled the disappearance of *B. coli* from air.

By means of the technic developed in this study, experiments on other physical and chemical factors were undertaken with the technical assistance of R. F.

Second part of a paper read before the Harvard University Tercentenary (1636-1936) Symposium on "The Environment and Its Effect upon Man" at the Harvard School of Public Health, Aug. 24, 1936. The first part was published in *THE JOURNAL*, November 21, p. 1698.  
20. A grant from the Milton Fund for studies on the defects of ventilating factors on dispersion and viability of micro-organisms suspended in air was made by Harvard University.

Wagner. Ozone in tolerable concentrations was found to give effects of a similar order of magnitude; i. e., olfactory concentrations four times the threshold value raised the death rate threefold. Commercial germicidal sprays also gave somewhat similar results. Negative and positive ions produced no observable differences in disappearance rate. The bactericidal action of a quartz mercury vapor lamp, however, was of a higher order of magnitude.<sup>21</sup>

The bactericidal effects of ultraviolet radiation on micro-organisms suspended in air proved to be of a higher order of magnitude than humidity, ozone or commercial germicides.

*Effect of Ultraviolet Radiation.—Physical Factors:*<sup>22</sup> These results precipitated an intensive investigation of

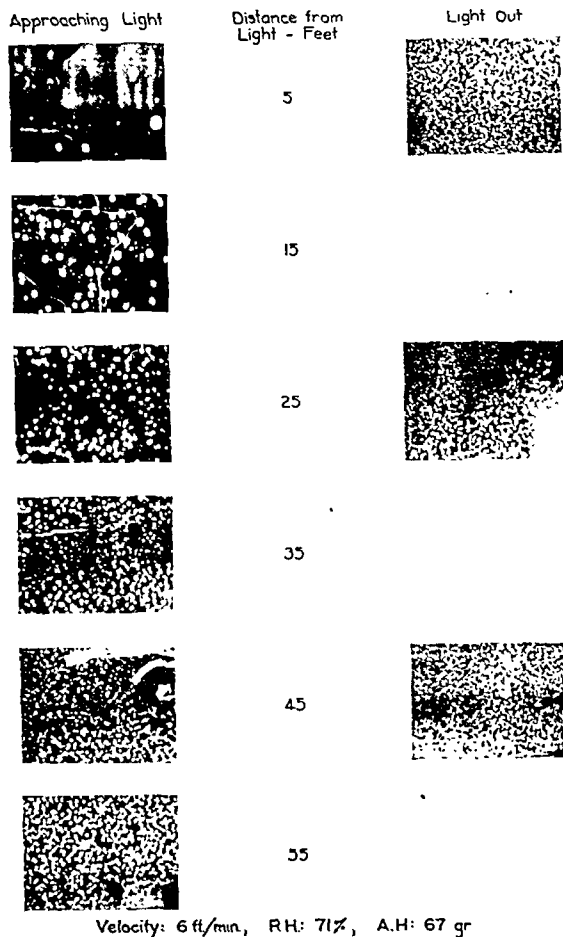


Fig. 2.—Bactericidal action of ultraviolet radiation on *B. coli* in air at different distances.

the physical and biologic factors governing the effect of ultraviolet radiation on micro-organisms suspended in air.

The interrelationship of space and time involved in the application of light to the sterilization of large volumes of air present mathematical problems hitherto unfamiliar either to sanitary science or to the science of illumination. In chemical disinfection, a relatively uniform concentration of active reagent is assumed for a disinfecting interval. In thermal sterilization or pas-

21. Wells, W. F., and Fair, G. M.: Viability of *B. Coli* Exposed to Ultraviolet Radiation in Air, *Science* 82: 280 (Sept. 20) 1935.

22. Wells, W. F.: Some Basic Physical Factors Governing the Bactericidal Action of Ultraviolet Radiation on Micro-Organisms Suspended in Air. *J. Bact.*, to be published.

teurization, each organism is subjected to a fairly uniform temperature for a specified interval of time. Where light has been used in the sterilization of liquids, a relatively thin film of exposure is necessary for effective action, so that each organism may be considered to be exposed to a relatively uniform degree of intensity of light for an adequate time interval. In attempting to

Preparatory to a more thorough analysis, and also to experimental application of light, studies were undertaken in the tunnel system of the Harvard School of Business Administration. A quartz mercury vapor lamp was placed in the center of this tunnel, which was 100 feet long, 8 feet wide and 7 feet high. Air inoculated with *B. coli* could be drawn down this tunnel at regulated velocities and the bacterial concentrations at different points determined by simultaneous sampling with three air centrifuges.

The bactericidal reductions at flows above 20 feet per minute were too low for accurate determinations in approaching to within 5 feet from the light. Measurable reductions in bacteria were obtained with low air flows, but these low flows could not be accurately measured. At 6 feet per minute, bactericidal reductions could be determined and the flow measured with a reasonable degree of accuracy. The results of such a test are illustrated in figure 2. Marked reductions are apparent up to within 5 feet from the light, and noticeable effects as far as 55 feet from the light. Precise results could not be obtained by this method in the tunnel arrangement, though a more precise laboratory arrangement utilizing closer approach was later developed by Benjamin Whisler<sup>23</sup> in a study for a doctor's thesis.

Obviously the zone of greatest bacterial reduction lies within the sections 5 feet before and beyond the light.

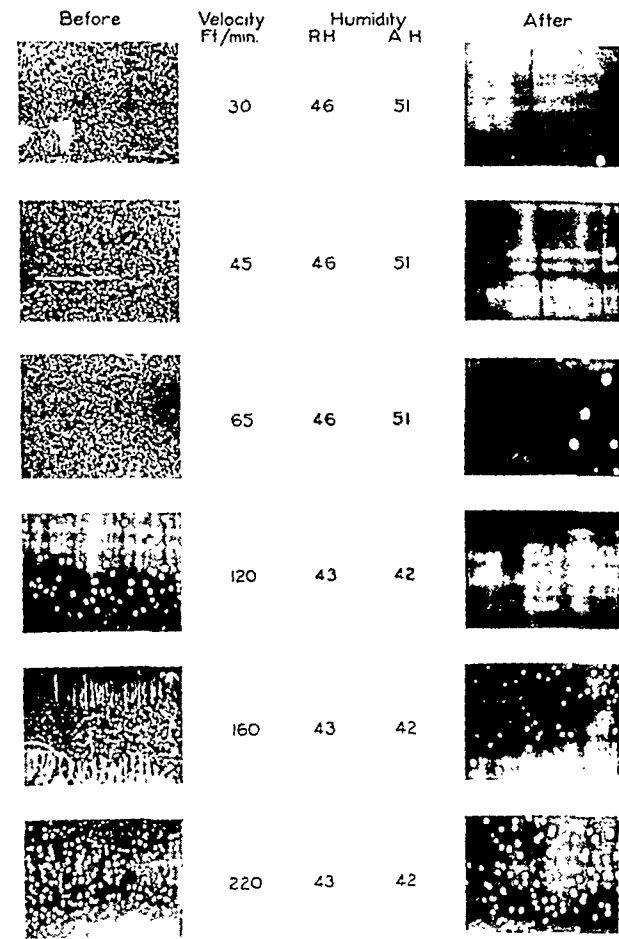


Fig. 3.—Bactericidal action of ultraviolet radiation on *B. coli* in air at different velocities. Passing light

sterilize by ultraviolet rays the large volumes of air involved in practical ventilation, it becomes difficult if not impossible to maintain uniform light intensity throughout the ventilated space, or to maintain a constancy of exposure in so mobile a medium.

The first step in the solution of the time-space inter-relationship was to develop means for determining the rate at which some test organism is killed at known distances from a given light. This cannot be done simply by exposing a quartz flask of air at some given distance from the light, because of the large volumes of air involved and the high cost of quartz. It was, however, possible to devise a dynamic method for exposing flowing air at predetermined distances from a given light for periods determined by the velocity of flow.

The number of organisms killed in moving from point to point toward a light can be determined. The integrated products of the times of exposure multiplied by the distances from the light then bears a simple relationship to the distances of the two sampling points from the light, by means of which the killing power constant of that light can be readily computed.

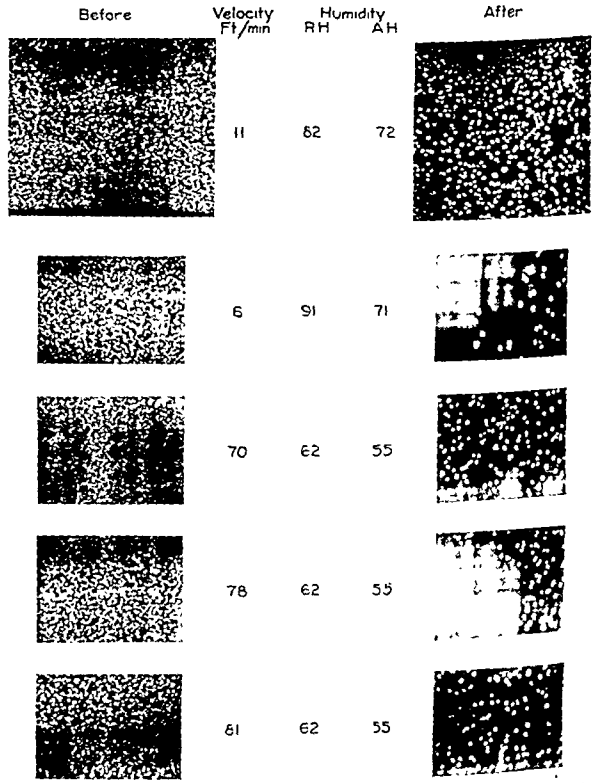


Fig. 4.—Bactericidal action of ultraviolet radiation on *B. coli* in air at different humidities. Passing light.

By sampling simultaneously at points upstream and downstream from the light, marked reduction in this tunnel was observed at velocities up to 222 feet per minute. The bactericidal effects in passing the light at six widely differing velocities under otherwise comparable conditions are illustrated in figure 3. More

23. Whisler, Benjamin: Unpublished thesis. Harvard University, 1936.

than half the bacteria were killed at velocities of 222 feet per minute, and yet some survived passage at a velocity of 30 feet per minute, which represents more than seven times the exposure.

Assuming the bacterial death rate to be proportional to the light intensity as given by the inverse square law for each point in space, it is possible to set up and integrate equations that can be tested by these experimental conditions.<sup>24</sup>

The values of  $KI_0 \equiv K_0$ , as given by these equations, with *B. coli* as the test organism, were found over the wide range of time-space variations, indicated by these tunnel experiments, to be constant within the errors expected from so simple an arrangement. Whisler's intensive studies with more refined apparatus confirmed the substantial validity of the assumptions and the practical applicability of the formulation. The values thus obtained for the constant  $K_0$  justify the initial assumption, which may now be modified and stated in the following form:

The total number of given organisms killed by a given light is proportional to the total quantity of light energy intercepted by the living organisms and approaches a maximum as the product of time and intensity for each approaches uniformity.<sup>20</sup>

Humidity: For constant atmospheric conditions the value of  $I_0$  in these equations defines the killing power of a given source against organisms having a vulnerability defined by  $K$ . The results illustrated in figure 3 were thus obtained under relatively uniform humidity. Comparison with the results given in figure 4 reveals amazing differences in bactericidal effect with different humidities. The results obtained at flows of 65 feet per minute shown in figure 3 are strikingly similar to the results shown in figure 4 for flows of only 6 feet per minute. This tenfold difference in killing power is the result of a difference in relative humidity between 45 and 90 per cent.

The numerical values of  $\log \frac{N_0}{N_t}$  obtained in the tunnel experiments are plotted on figure 5 against the reciprocal of the velocity in conformity with the equations. It is seen from this chart that the results fall into two classes, each class represented by a straight line as would occur if  $K$  were constant for the class. The angle between the lines indicates a wide difference between the value for  $K$  for each class and it is seen that this difference corresponds to a difference in relative humidity, the killing power at low humidities being approximately ten times those obtained at high humidities. Since the inverse square law has been found to hold with high humidities as well as low humidities, the reduction in killing power appears to be due to interference with the bactericidal reaction on the bacteria.

24. The formulation for simple physical combinations are summarized: If  $N_0$  = number of organisms before and  $N_t$  = number of organisms after irradiation by light of lethal intensity  $I$  for time  $t$ , then  $\log_e \frac{N_t}{N_0} = -KI_t$ ; and at  $r$  distance from a source  $I_0 = \frac{-KI_0 t}{r^2}$ ; and in a sphere of  $R$  radius (source at center), maximum  $= \frac{-3KI_0 t}{R^2}$  for infinite mixing of air, and minimum  $= \frac{-1.2KI_0 t}{R^2}$  for zero mixing of air; and approaching a source at velocity  $v$  from  $+\infty$  to  $r$  distance from source,  $= \frac{-KI_0}{v \cdot r}$ ; and passing the source (from  $+\infty$  to  $-\infty$ ) on a straight line  $r$  distance from source,  $= \frac{-\pi KI_0}{v \cdot r}$ , and for a cylinder of  $R$  radius with source in axis (from  $+\infty$  to  $-\infty$ ), maximum  $= \frac{-2\pi KI_0}{v \cdot R}$  for infinite turbulence, and minimum  $= \frac{-1.24\pi KI_0}{v \cdot R}$  for stream line flow.

The results of the more intensive study by Whisler clearly corroborate the relation between the vulnerability of *B. coli* and relative humidity. The values of  $K_0 \equiv KI_0$  drop precipitately between relative humidities of 55 per cent and 65 per cent, above and below which the change is gradual, the values approaching constancy.

Obviously, humidity becomes a basic factor governing the bactericidal effect of ultraviolet radiations on bacteria suspended in air, the killing power for low humidities being manyfold that observed at higher humidities.

Spectral Range: Gates<sup>25</sup> has thoroughly investigated the lethal action of different wavelengths of light on bacteria smeared on agar plates. His conclusion that waves longer than 300 millimicrons are relatively ineffective has been confirmed for air suspensions of bacteria by filtering out these shorter waves. His con-

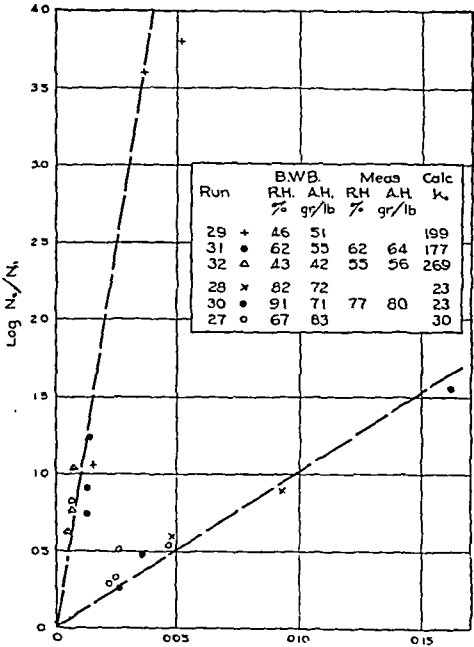


Fig. 5.—Effect of humidity on death of *B. coli* passing ultraviolet rays in tunnel.

clusion that the maximum effect lies in a zone midway between 200 and 300 millimicrons would conform to the values of  $KI_0$  obtained by lamps emitting different spectral ranges. The most efficient source among several types tested proved to be a 48 inch quartz Geisler mercury tube<sup>26</sup> emitting 90 per cent of its radiation as a wavelength of 254 millimicrons. Only 12 inches of a double arc gave a value for  $KI_0$  of 910, at a relative humidity of 42 per cent, when tested against *B. coli*. Since this lamp consumes about 35 watts, the  $KI_0$  approximates 50 per watt. If this value is applied in the preceding equations, it is seen that less than one colon bacillus per thousand suspended in several thousand feet of air would remain after irradiation with this light.

Those ultraviolet ray sources which emit the largest proportion of radiant energy midway between 200 and 300 millimicrons are most efficient in destroying micro-organisms suspended in air.

25. Gates, F. L.: A Study of the Bactericidal Action of Ultraviolet Light, *J. Gen. Physiol.* 13: 231 (Nov.) 1929.  
26. Kindly lent by the Hanovia Chemical Manufacturing Company.

**Biologic Factors.**—The bactericidal ranges of commercial ultraviolet lamps seemed to warrant experiments looking toward their practical application in sanitary air control. A therapeutic lamp was therefore set up in a clinic of the Children's Hospital, where the atmosphere had been found to build up a relatively high bacterial concentration during hours of active service. Preliminary tests, however, did not give the expected results. The lamp was found by test to be adequate and also proved in the clinic room to be effective against *B. coli*. If the presence of more resistant organisms was the explanation of these disappointing results, an important question was raised, since there is no hygienic significance in the elimination of *B. coli* from air. This study was therefore temporarily put aside until further information regarding the relative vulnerability of significant organisms to ultraviolet radiation could be

be rubbed off, and spread through the air to other surfaces. The relative coarseness of the suspended particles, as compared to droplet nuclei, was indicated by the ratio of bacterial counts on centrifuge tubes and on Petri plates, which was intermediate between the ratios found in the humidified weaving rooms and the dusty carding rooms of cotton mills.

The organisms first subjected to test in the experimental tank were the staphylococci and sarcinae isolated from the tubes taken at the Children's Hospital. The staphylococci were considerably more resistant than *B. coli*, sarcinae considerably more resistant than staphylococci. Alpha streptococci, on the other hand, were comparable in their vulnerability to *B. coli*.

The fact that the less vulnerable organisms were those which normally grow in masses and are separated only with difficulty suggested that their apparent resistance to light, as compared with those which separate naturally into individual unit cells, was due to this grouping. Streptococci, which divide in parallel planes, forming chains which are readily broken up, were comparable in their vulnerability to *B. coli*; staphylococci, which divide irregularly in more than one plane, resulting in cohesive grapelike clusters, were more resistant; while sarcinae, which divide in three planes at right angles to one another, forming packets with a minimum of eight cells, were still more resistant. To determine whether the manner in which organisms naturally group themselves was a prime factor in their varying resistance, cultures were grown in a revolving flask with suitable culture medium barely covering a layer of glass beads. Grinding during growth in this tiny ball mill, followed by prolonged centrifuging, provided a technic whereby suspensions consisting largely, though never entirely, of individual unit cells of streptococci and staphylococci could be tested against ultraviolet rays. Sarcinae, on the other hand, could not be broken down further than to the packet of eight cells, which seemed to constitute the basic unit.

In table 2 is given the vulnerability constant *K* for four organisms grown in the revolver, with *B. coli* for comparison. The differences in vulnerability between unit cells of streptococci and staphylococci, produced by this technic, and the naturally single cells of *B. coli* are within the limits of experimental error. The vulnerability constant for sarcinae, however, differs markedly from those for the other organisms. Presumably each of the eight cells in a packet is sufficient for reproduction, and it would be necessary to kill all eight to prevent a colony developing from a suspended packet.

The mathematical formulation employed in the derivation of the constant *K* for single cells must obviously be modified before application to multicellular groups of organisms. Under the conditions of the test, thirteen times as much light was required to destroy all eight of the cells grouped in a sarcinae packet as was required to kill each colon bacillus dispersed individually. This would conform to the assumption that the vulnerability of individual cells is likewise similar to that of the other organisms given in the table. A progressive increase in the vulnerability constant *K* during the course of the tests was observed for those organisms which tend to form clusters, but not for *B. coli*, as would be expected if the number of cells in the clusters is being reduced by a natural death rate. The implied assumption that only one light unit is required to destroy one life unit, which underlies the mathematical formulation, thus appears to be satisfied.

TABLE 2.—Relative Vulnerability to Ultraviolet Radiation of Individual Cells of Various Cocci Suspended in Air (*B. coli* 1.00)

Organism	Number of Runs	Vulnerability	
		Constant	<i>K</i>
<i>B. coli</i> .....	20	1.00	
<i>Streptococcus viridans</i> .....	5	1.05	±.07
<i>Staphylococcus albus</i> .....	5	1.18	±.07
<i>Staphylococcus aureus</i> .....	7	1.21	±.20
<i>Sarcina lutea</i> *.....	3	0.85	±.02

\* The chance that all eight cells of a packet will be killed is the eighth power of the chance that an individual cell in a packet will be killed. If one half of the cells in a packet lie in the shadow of the other half, and if the packet turns in such a manner that each cell shares equally the light and shadow, the chance of a cell in a packet being killed is one-half the chance when the cells are so distributed in space that no cell cellopses another. From the determination of the vulnerability of packets of sarcinae (0.083 when 66 per cent survived), the vulnerability constant of the individual sarcina cell has been computed as 0.85, if *B. coli* is given a value of one. Since, in the determination, packets flowed in a smooth stream past the light source in less than two seconds, it is doubtful whether each cell shared equally in light and shadow. Since exposure to equal quantities of light is the condition of maximum killing, the vulnerability of sarcina cells would be greater than is indicated by this computed value. The fact that doubling the intensity of the light increased the proportion of packets killed by only 7 per cent would indicate that a constant proportion of cells were thus protected from the light, owing to a constant condition of flow, which was not affected by changes in light intensity. From the figures, it would appear that more than half of the packets survived because of protected cells, and the vulnerability constant of individual sarcina cells is greater than one. The importance of illuminating particles on various sides becomes apparent.

ascertained. The equipment previously developed for determining the viability of droplet nuclei infection was therefore adapted to the study of the biologic factors bearing on the germicidal effect of ultraviolet radiation. Samples of air were withdrawn from the tank through sianized tubes to two Wells air centrifuges. One branch led directly to a centrifuge; the other branch included a small chamber enclosing a quartz Geisler mercury tube, by means of which the air passing to the second centrifuge could be irradiated with ultraviolet light. Organisms in the tubes taken at the Children's Hospital both before and after irradiation of the air were observed to be predominantly sarcinae and staphylococci, owing probably to the nature of the activities of that particular clinic. These organisms are characteristic of the skin and were raised into the air by the dressing and undressing of the patients, together with the treatments given, which consisted largely of massage, manipulative exercises, and so on. These organisms typically grow in clusters and are thrown into the air in masses, which may be a natural provision for the survival of organisms adapted to grow on surfaces,

Cell units of the organisms so far tested, therefore, have proved to be equally vulnerable to ultraviolet radiation.

The study of the biologic factors underlying the vulnerability constants is far from complete. Such factors as capsule formation, spores and pigment remain to be explored. Ultimately the vulnerability constants of pathogens will be independently determined. The fact shown in table 2, that *Staphylococcus aureus* and *Staphylococcus albus* do not, in spite of the difference in pigment, differ markedly, suggests that the latter factor is not of the prime importance that might be imagined. There has not been enough work to indicate that more resistant organisms are not common. There is, however, sufficient evidence to indicate that *B. coli* is not peculiar in its susceptibility.

In the practical application of ultraviolet radiation it becomes evident that a distinction must be made between clumps and individual organisms, between dust and droplet nuclei. Air purification methods that depend on filtration or sedimentation may be more effective against dust, and ultraviolet rays may be more effective against nuclei, the two being complementary and therefore effectively combined. Likewise, methods that are effective in testing for one type of suspended organism may be inappropriate for testing the efficiency of purification devices against the other type.

**Virucidal Action of Light:**<sup>11</sup> The persistent belief that air may transmit certain virus diseases made it important to determine whether bactericidal light would also destroy air suspensions of virus. Into the air of the tank were atomized the filtrates of lung emulsions of ferrets made ill with the Puerto Rico 8 strain of influenza virus. Simultaneous sampling under identical conditions of air as it came from the tank and after ultraviolet irradiation indicated a definite virucidal action of the rays. In two tests the ferrets that were inoculated with material recovered from unirradiated tank air suffered a typical attack of influenza, which was confirmed by virus neutralization tests. The ferrets that received material simultaneously recovered from the air of the tank under identical conditions, except for irradiation of the air, failed to show any symptoms of influenza, and virus neutralization tests subsequently showed no development of immunity.

The infectivity for ferrets of air suspensions of the Puerto Rico 8 strain of influenza virus was destroyed by ultraviolet radiation.

#### APPLICATION OF SANITARY AIR CONTROL

The question of air-borne infection will not be definitely answered until common air supplies are rendered free from nasopharyngeal contamination, just as endemic water-borne intestinal disease became apparent only with change from polluted to pure water supplies.

A solid foundation for sanitary air analysis has been developed, by which the purity of air can be determined, air contamination interpreted, and the efficiency of air purification processes tested. The practical effectiveness of certain devices that can be applied to the bacterial purification of air has been demonstrated. Others<sup>22</sup> have reported beneficial results following control of the bacterial content of the air of operating rooms. The experimental application of sanitary air control in hospitals, schools and other gathering places is indicated.

27. Hart, D.: Sterilization of the Air in the Operating Room by Special Bactericidal Radiant Energy, *J. Thoracic Surg.* 6:45-51 (Oct.) 1936.

## Clinical Notes, Suggestions and New Instruments

### ANTERIOR LENTICONUS

E. C. MOULTON, M.D., FORT SMITH, ARK.

Anterior lenticonus is such an extremely rare condition that this case is presented briefly for consideration. All literature to date reveals only ten undoubted cases. Dr. Benjamin Rones reviewed these cases before this section in 1934. The case here presented is offered as the eleventh true type of anterior lenticonus.

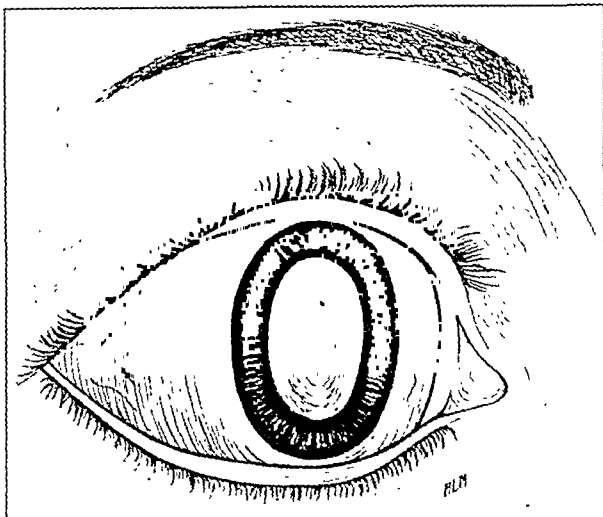


Fig. 1.—Right eye showing semi-diagrammatically the extent and relative size of the cone.

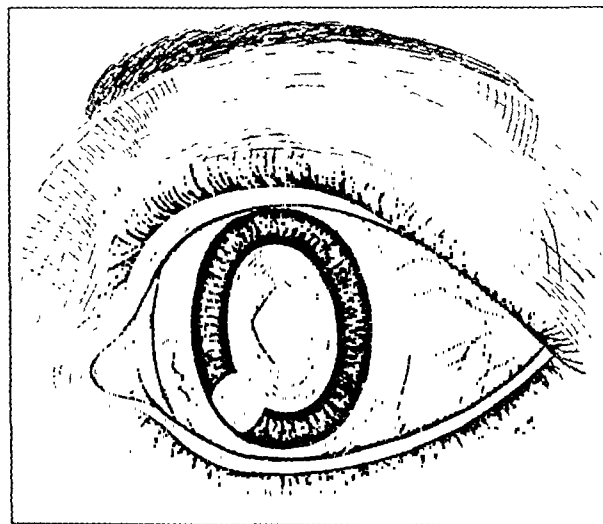


Fig. 2.—Same case as in figure 1 showing left eye, on which an optical iridectomy had been done.

#### REPORT OF CASE

S. W. H., a man, aged 33, came under observation in March 1927. Since the age of 17 he had been aware of poor vision, causing him to give up boxing and to be refused enlistment in the army. As a furnace builder in a glass factory he was considerably handicapped. Vision in a darkened room was:

Right 20/100 + 1.00 = 20/70  
Left 20/70 + 1.00 = 20/50

When the refraction room was illuminated vision became reduced to 10/200 and did not admit of any improvement, this

Read before the Section on Ophthalmology at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 14, 1936.

change, of course, resulting from the alteration in the size of the pupil.

With the ophthalmoscope the usually described "oil drop" in the center of the pupil was noticed, and then by use of the loupe and focal light the anterior lenticonus could be detected. Under atropine the fundus could be seen nicely through the peripheral emmetropic lens substance and also a clear view was obtained through the apex of the cone with a minus 20.00

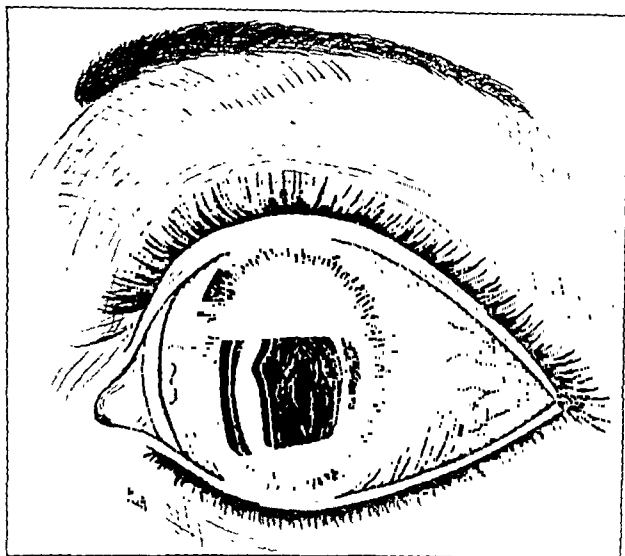


Fig. 3.—Slit lamp appearance with broad beam of light showing corneal parallelepiped and the beam of light traversing the lens with the cone on its anterior surface.

lens in the sight hole. With the exception of the lenticular defect in each eye all the media and fundus were quite normal. In a few days when the effect of the mydriatic had worn off and the pupil, in myosis, was again the size of the base of the cone, the patient reported and requested more atropine in his eyes. Reluctantly it was given him for personal use. He used it continuously against my advice, alternating eyes a week at a time. Finally in 1934 he was persuaded of the danger of this practice and submitted to operation.



Fig. 4.—Optical section with very narrow light beam and full illumination. Only the anterior band of the lens and the anterior band of disjunction are involved, all the other zones of discontinuity being quite normal.

An iridectomy was done in the lower nasal quadrant of the left eye with resulting 20/50 vision and discontinuance of atropine. At no time have glasses been of comfort.

The microscopic examination of the lens with the slit lamp in January 1936 was most striking. With a broad beam of light the cone was clearly seen but it was with the very narrow beam and full illumination that the details in optical section

are so instructive. The results are quite parallel to the reports of Kienecker<sup>1</sup> and Feigenbaum,<sup>2</sup> which are the only other two cases observed with the slit lamp. In this case only two zones of discontinuity are involved, namely the anterior band of the lens and the anterior band of disjunction. There are no accessory bands. These two bands bend forward over the clear underlying contents of the conus without alteration in their parallelism or change in thickness of either zone. The zones defining the adult nucleus and the fetal nucleus are quite normal, as are all the posterior bands. On the apex of each cone and situated just beneath the intact anterior capsule, are a few very minute and delicate brown granular opacities.

Thus the three cases examined to date with the slit lamp must be of the acquired form of anterior lenticonus, and in this one, as in the other two, it is a question rather of lenticlobus than of lenticonus.

205 Merchants National Bank Building.

## Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING ARTICLE.  
HOWARD A. CARTER, Secretary.

### INTERFERENCE WITH RADIO COMMUNICATION BY THERAPEUTIC EQUIPMENT

H. B. WILLIAMS, M.D., Sc.D.  
NEW YORK

There is hardly a home now which is without a radio-receiving set and hardly an individual who does not understand the meaning of the word "static" as used in connection with radio reception. While relatively little can be done at present to prevent disturbance by electrical storms, a great deal of disturbance for which Mother Nature has been blamed has originated in the activities of man. Some of this man-made "static" is unnecessary and most of it can be prevented for a price. Fortunately, in many cases, this price is not prohibitively high.

While the radio in the average home is largely a matter of entertainment and can be dispensed with when necessary, there are other uses, such as communication between ships and shore, aircraft and ground, and the transmission of directional signals, interference with which may easily result in loss of life.

Many of the members of the medical profession will learn with surprise that we have been, unwittingly, responsible for broadcasting a great deal of disturbance of a particularly annoying type. The most prominent offenders in our armamentarium are the various medical and surgical diathermy machines, particularly the new short wave diathermy and artificial fever devices.

Last winter important activities of the Naval Research Laboratory at Washington, D. C., were subjected to interference so serious as to stop the work completely. Eventually, after great trouble and expense, the disturbance was traced to therapeutic equipment. The first disturbing instrument located was a diathermy unit located in a hospital at Cambridge, Mass.

It is common knowledge that broadcasting stations make use of a large aerial structure to facilitate radiation of energy. Without such a structure the disturbance, unless exceptionally intense, is unlikely to be felt at great distances. The apparatus at Cambridge was found to have been so connected to the power supply line that the latter functioned as an antenna

1. Kienecker, R.: *Klin. Monatsbl. f. Augenh.* 82:55 (Jan. 25) 1929.  
2. Feigenbaum, A.: *Folia ophth. orient.* 1:103 (Nov.) 1932.

and enabled this small apparatus to broadcast a "sky wave" of considerable intensity. The insertion of a suitable electric filter between the apparatus and the power line was all that was necessary to stop most of the trouble. It is of interest to know that this equipment was supplied and installed by an electrical manufacturer who also supplies vast quantities of radio equipment and is vitally interested in avoidance of interference. In view of this I think that the medical profession may be forgiven for the trouble that has occurred in the past; but now that the facts are known every effort should be made to minimize the evil.

It is expected that the Council on Physical Therapy of the American Medical Association will presently alter its requirements for acceptance of electrical equipment such as is known to have caused interference. Manufacturers will be asked to submit evidence that the construction and installation specifications are such as to prevent interference.

Even though an apparatus may not broadcast an intense sky wave, it will, unless properly filtered, cause disturbance of every radio receiving set which derives power from the same line, thus becoming a nuisance even if it escapes being a menace.

It is confidently expected that users of existing equipment purchased from reliable manufacturers will be able to secure from the manufacturers such additional equipment and engineering advice as will make it possible to prevent interference. Any one who has difficulty in obtaining the desired information or equipment is invited to communicate with the Secretary of the Council on Physical Therapy of the American Medical Association.

It is imperative that the medical profession and the manufacturers of electrical equipment for the profession take prompt steps to abate this nuisance, as otherwise it is certain that relief through legislation will be requested. This is liable to bring undesirable restrictions and will probably be entirely unnecessary if suitable action is initiated by the profession itself.

## Council on Foods

### ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COUNCIL ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

FRANKLIN C. BING, Secretary.

#### SEXTON BRAND BARTLETT PEARS, JUICE PACKED

*Manufacturer.*—John Sexton & Company, Chicago.

*Description.*—Canned pears packed in juice.

*Manufacture.*—Bartlett pears harvested green are stored to reach proper degree of ripeness, graded, mechanically peeled, cut, stemmed, inspected, brined, rinsed and placed in cans. The cans are automatically filled with fruit juice, exhausted, sealed and processed at 100 C.

*Analysis* (submitted by manufacturer).—(Analysis of entire contents including liquid): moisture 87.0%, total solids 13.0%, ash 0.3%, fat (ether extract) 0.1%, protein ( $N \times 6.25$ ) 0.2%, crude fiber 0.5%, carbohydrates other than crude fiber (by difference) 11.9%.

*Calories.*—0.49 per gram; 14 per ounce.

*Claims of Manufacturer.*—For diets in which sweetened fruit is proscribed.

- (a) OUR PRIDE BRAND CRYSTAL WHITE SYRUP
- (b) OUR PRIDE BRAND GOLDEN TABLE SYRUP

*Distributor.*—Meyer Schmid Grocer Company, St. Louis.  
*Packer.*—Union Starch and Refining Company, Granite City, Ill.

*Description.*—(a) A table syrup; corn syrup sweetened with sucrose; flavored with vanilla extract—the same as Pennant Crystal White Syrup (THE JOURNAL, Jan. 30, 1932, p. 403). (b) A table syrup; corn syrup flavored with refiners' syrup—the same as Pennant Golden Table Syrup (THE JOURNAL, Jan. 30, 1932, p. 403).

*Claims of Manufacturer.*—For table use and as a carbohydrate supplement for milk modification in infant feeding.

#### SEXTON BRAND APPLE SAUCE, JUICE PACKED

*Manufacturer.*—John Sexton & Company, Chicago.

*Description.*—Canned apple sauce prepared from peeled and cored apples.

*Manufacture.*—Blended varieties of western New York apples, tree ripened, are hand picked, spray washed, mechanically peeled and cored, inspected, washed in salt water, and cooked to the proper degree. Seeds and fibrous parts are removed by pulping machine and the apple sauce is hermetically sealed and processed.

*Analyses* (submitted by manufacturer).—(Analysis of entire contents including liquid): moisture 87.7%, total solids 12.3%, ash 0.24%, fat (ether extract) 0.2%, protein ( $N \times 6.25$ ) 0.2%, crude fiber 0.46%, carbohydrates other than crude fiber (by difference) 10.2%.

*Calories.*—0.43 per gram; 12 per ounce.

*Claims of Manufacturer.*—For diets in which sweetened fruit is proscribed.

#### GOLDEN DRIP BRAND SYRUP SILVER DRIP BRAND CRYSTAL WHITE SYRUP

*Distributor.*—Empire Distributing Co., St. Louis.

*Manufacturer.*—Union Starch & Refining Co., Granite City, Ill.

*Description.*—1. A table syrup; corn syrup flavored with refiners' syrup; the same as Pennant Golden Table Syrup (THE JOURNAL, Jan. 30, 1932, p. 403). 2. A table syrup; corn syrup sweetened with sucrose; flavored with vanilla extract; the same as Pennant Crystal White Syrup (THE JOURNAL, Jan. 30, 1932, p. 402).

#### APOLLO BRAND TOMATO JUICE

*Distributor.*—Halpen-Green Company, Philadelphia.

*Packer.*—Vincennes Packing Corporation, Vincennes, Ind.

*Description.*—Pasteurized tomato juice with added salt; retains in high degree the vitamin content of the raw juice. (The same as Alice of Old Vincennes Tomato Juice, THE JOURNAL, Feb. 20, 1932, p. 640.)

#### GROSSE POINTE BRAND FANCY CRUSHED HAWAIIAN PINEAPPLE

*Distributor.*—R. Schayowitz & Sons, Detroit.

*Packer.*—Hawaiian Pineapple Company, San Francisco.

*Description.*—Canned pineapple packed in concentrated pineapple juice with added sucrose. The same as Dole canned pineapple (THE JOURNAL, April 8, 1933, p. 1106).

#### HEART OF AMERICA BRAND TOMATO JUICE

*Distributor.*—Christopher Sales Company, Kansas City, Kan.

*Packer.*—Vincennes Packing Corporation, Vincennes, Ind.

*Description.*—Pasteurized tomato juice with added salt; retains in high degree the vitamin content of the raw juice; the same as Alice of Old Vincennes Tomato Juice (THE JOURNAL, Feb. 20, 1932, p. 640).

# THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, NOVEMBER 28, 1936

## PHYSICIANS AND OLD AGE PENSION TAXES UNDER THE SOCIAL SECURITY ACT

Preliminary procedures are under way to make effective the old age benefit provisions of the Social Security Act. The regulations that have been promulgated by the Bureau of Internal Revenue looking toward the assembly of the mass of detailed data with respect to the employers and employees from whom the taxes are to be collected are of immediate interest to physicians.

Each person who on November 16 was the employer of one or more persons, subject to the exceptions noted, must have reported that fact prior to November 21 to the postmaster from whose post office the employer obtained his office or business mail. He must also have made application on form SS-4 for the assignment of a number—an "identification number" to be used for identification purposes in connection with the collection of taxes under the act. Physicians who were employers on the date named were required to comply with this requirement. If they failed to do so they should now communicate with their local postmasters for instructions as to how to proceed to make the delayed application. A physician who became an employer after November 16 must also apply for an identification number within a period of thirty days after the relationship of employer and employee is established. This application, the regulations provide, must be made to the field office of the Social Security Board in the area in which the office of the physician is situated or, in the absence of such field office, to the Social Security Board at Washington, D. C.

Persons who were employees on November 24 are likewise required to obtain numbers, called "account numbers," by filing application on form SS-5, on or before December 5, with the local postmaster. Persons becoming employees after November 24 must also file application for numbers thirty days after the employment begins. While physicians generally are considered, under the regulations, as independent contractors and consequently not subject to the taxes imposed on employees, if physicians are employed on a full time

or part time salary basis they are apparently to be considered as employees. Such physicians must file application for "account numbers" on form SS-5. As employees they are subject to the tax on employees, and their employers must pay the employer's tax with respect to them.

Certain employments do not come within the old age benefit provisions of the Social Security Act. Among the exceptions are agricultural labor, domestic service in a private home, casual labor not in the course of the employer's trade or business, service performed by an individual who has attained the age of 65, service performed in the employ of the United States or of any state or subdivision or instrumentality of either, and service performed in the employ of a corporation, community chest, fund or foundation organized and operated exclusively for religious, charitable, scientific, literary or educational purposes, or for the prevention of cruelty to children or animals, no part of the net earnings of which inures to the benefit of any private shareholder or individual. Physicians who employ only persons embraced within these excepted employments or who are themselves engaged in such excepted services are not required to make application for identification or account numbers.

Employers' and employees' taxes will be collected by means of monthly returns to be filed by employers, who not only must pay to the local collector of internal revenue the tax imposed on employers but also must deduct from the wages of their employees the employee's tax and transmit that also to the collector. The first returns will be due not later than March 1, 1937, covering wages paid for services rendered during the month of January. The regulations that have been promulgated cover in detail the records that must be kept by employers, the method of executing returns, the information they must contain and other matters relating to the tax. Physicians should promptly familiarize themselves with all the requirements, so that as much confusion as possible may be avoided. THE JOURNAL will from time to time offer suggestions to aid physicians in meeting the requirements of the act.

## MYASTHENIA GRAVIS

Myasthenia gravis was first described by Willis<sup>1</sup> in the seventeenth century. For years it was considered a neurologic disorder even though investigators did not find any constant or characteristic lesion of the central or peripheral nervous system. Jolly<sup>2</sup> in 1895 suggested that the disease might be primarily one of the muscles. Later the muscular localization of this disorder was more firmly established by Buzzard's<sup>3</sup> demonstration that lymphocytic infiltration was more or less consis-

1. Willis, quoted by Guthrie, L. G.: "Myasthenia Gravis" in the Seventeenth Century, *Lancet* 1: 330 (Jan. 31) 1903.

2. Jolly, F.: I. Ueber Myasthenia gravis pseudoparalytica, *Berl. Klin. Wchnschr.* 32: 1 (Jan. 7) 1895.

3. Buzzard, E. F.: Myasthenia Gravis, *Tr. Path. Soc. London* 56: 355, 1905.

tently a pathologic characteristic of the muscle fibers of patients who had the disease. These fundamental observations impelled investigators in the field definitely to shift their interest from the nervous to the muscular system. Meanwhile hyperplasia of the thymus, in association with myasthenia gravis, was noted by Oppenheim<sup>4</sup> in 1899. Subsequently hyperplasia of the thymus was found in nearly half of the cases in which necropsy was performed. This was sufficient to cause many investigators to consider such enlargements as of etiologic significance. Nearly every other ductless gland also has been incriminated, but there is a distinct lack of any substantial evidence of their participation in the syndrome.

Finally it was recognized that in this disease some phase of muscle metabolism was disturbed. The finding of creatine in the urine of a few patients who had myasthenia gravis, coupled with the known importance of phosphocreatine in muscle metabolism, stimulated interest in the possibility that the disease was primarily one of intermediary muscle metabolism. Evidence of a specific disturbance of metabolism, however, has not been obtained by the methods of investigation at present available, as has been shown by the comprehensive chemical studies by Boothby and his co-workers.<sup>5</sup> Creatinuria was observed in only seven of their thirty cases; however, after the daily administration of aminoacetic acid was started there developed a definite increase in the amount of creatine excreted by those who had a previous creatinuria; and a creatinuria developed to a greater or less degree in those who did not previously excrete creatine. A similar increase in creatinuria also occurs in most normal persons after the ingestion of aminoacetic acid. Some investigators have conjectured that the site of the process responsible for the fatigability characteristic of the disease is at the myoneural junction. Most, however, are still satisfied that the disturbance of function is within the muscle fiber; they leave the mechanism of the disturbance and its exact localization within the muscle fiber in the realm of speculation.

Associated closely with the advancing knowledge of myasthenia gravis has been the study of the chemical mediation of nerve impulses. Recent research<sup>6</sup> indicates that acetylcholine is liberated on stimulation of motor nerves to voluntary, striated muscle. It is further recognized that physostigmine and prostigmin<sup>7</sup> probably prevent destruction of acetylcholine by inhibition

of the normal blood choline esterase. Concentration of this esterase has been reported by Stedman<sup>8</sup> to be low in one case of myasthenia gravis. Potassium chloride,<sup>9</sup> when injected into the arteries of cats, will cause release of acetylcholine from tissues of which the innervation is cholinergic. These interesting observations merit consideration in view of their obvious importance in interpretation of the pathogenesis of the disease. However, to attempt at present a deduction from the information available might result in many fallacious concepts. This most recent work obviously does not tell the whole story. Boothby<sup>10</sup> has aptly stated that investigators are still ignorant of the cause of the disturbance in the contracting mechanism, which is an important feature of myasthenia gravis.

Many investigators have noted the relationship between myasthenia gravis and infection, especially infection of the upper part of the respiratory tract, and some of them have suggested, without direct evidence, that a toxin, probably of microbic origin, is the agent responsible for some type of chemical upset causing the characteristic fatigability. In a recent study Butt<sup>11</sup> has demonstrated gram-positive diplococci within or between the muscle fibers in some of the sections of muscle in seven cases of myasthenia gravis. Norris<sup>12</sup> also has demonstrated micro-organisms in the muscles of a patient who had this disease; but since he found them also in the muscles of a patient who had Addison's disease and in those of normal controls he was not inclined to consider their presence as significant. Rosenow and Heilman<sup>13</sup> have successfully taken cultures and identified streptococci from patients who had the disease and have produced the clinical and pathologic picture in animals by inoculating them with these organisms. It remains for future investigations to determine whether these organisms are the agents responsible for this syndrome.

Some of the most important recent contributions in the study of myasthenia gravis have been in treatment. The beneficial effect of ephedrine was demonstrated by Edgeworth<sup>14</sup> in 1930, and the value of aminoacetic acid was pointed out simultaneously by Remen<sup>15</sup> and by Boothby<sup>16</sup> in 1932 following the report of Thomas,

8. Stedman, Edgar: The Choline Esterase Content of Blood in Myasthenia Gravis, *J. Physiol.* **54**: 56P, 1935.

9. Feldberg, W., and Guimaráis, J. A.: The Liberation of Acetylcholine by Potassium, *J. Physiol.* **86**: 306 (March 9) 1936.

10. Boothby, W. M.: Myasthenia Gravis: Seventh Report, Medical papers dedicated to Dr. Henry A. Christian, February 1936, p. 883.

11. Butt, H. R.: Myasthenia Gravis: A Study of Postmortem Observations, Including the Demonstration of Gram-Positive Bacteria (Streptococci) In and Between the Muscle Fibers, *Arch. Path.* **21**: 27 (Jan.) 1936.

12. Norris, E. H.: The Thymoma and Thymic Hyperplasia in Myasthenia Gravis with Observations on the General Pathology, *Am. J. Cancer* **27**: 421 (July) 1936.

13. Rosenow, E. C., and Heilman, F. R.: Serologic Studies with Streptococci Isolated in Cases of Myasthenia Gravis, *Proc. Soc. Exper. Biol. & Med.* **34**: 477 (May) 1936.

14. Edgeworth, Harriet: A Report of Progress on the Use of Ephedrine in a Case of Myasthenia Gravis, *J. A. M. A.* **94**: 1136 (April 12) 1930.

15. Remen, L.: Zur Pathogenese und Therapie der Myasthenia gravis pseudo-paralytica, *Deutsche Ztschr. f. Nerven.* **128**: 66, 1932.

16. Boothby, W. M.: Myasthenia Gravis: A Preliminary Report on the Effect of Treatment with Glycine, *Proc. Staff Meet., Mayo Clin.* **7**: 557 (Sept. 28) 1932.

4. Oppenheim, quoted by Skinner, E. F.: A Case of Myasthenia Gravis, *J. Neurol. & Psychiat.* **4**: 344, 1924.

5. Boothby, W. M.; Adams, Mildred, and Power, M. H.: Myasthenia Gravis: Second Report on the Effect of Treatment with Glycine, *Proc. Staff Meet., Mayo Clin.* **7**: 737 (Dec. 28) 1932. Adams, Mildred; Power, M. H., and Boothby, W. M.: The Influence of Glycine on the Excretion of Creatine and Creatinine, *Am. J. Physiol.* **111**: 596 (April) 1935; Chemical Studies in Myasthenia Gravis, *Ann. Int. Med.* **9**: 823 (Jan.) 1936.

6. Dale, H. H.; Feldberg, W., and Vogt, M.: Release of Acetylcholine at Voluntary Motor Nerve Endings, *J. Physiol.* **56**: 353 (May 4) 1936. Lindsley, D. B.: Myographic and Electromyographic Studies of Myasthenia Gravis, *Brain* **58**: 470 (Dec.) 1935.

7. Prostigmin is the dimethyl carbamic ester of hydroxyphenyltrimethyl ammonium methylsulfite.

Milhorat and Techner<sup>17</sup> on the improvement in fatigability following the administration of aminoacetic acid to a patient who had progressive muscular dystrophy. Knowledge of the effects of these substances has almost completely changed the course of treatment and the prognosis. In addition, the fact that physostigmine,<sup>18</sup> prostigmin<sup>19</sup> and potassium chloride<sup>20</sup> exert favorable effects on patients who have myasthenia gravis have stimulated a great amount of interest in treatment of the disease.

Boothby<sup>21</sup> has emphasized the fact that the disease is of long duration and that no single therapeutic procedure or any one drug cures the disease. Therefore the patient must be educated to avoid so far as possible the dangerous complications of myasthenia gravis; also all available therapeutic procedures must be utilized to decrease the characteristic fatigability. Of the eighty-two patients treated by Boothby, fifty are now working either full time or part time and although such results, in such a large series, are unusually favorable, there is still urgent need for continuation of carefully conducted and controlled studies of this disease.

## Current Comment

### INFLUENZA IN THE UNITED STATES

During eleven of the seventeen years since the summer of 1919, recognizable outbreaks of influenza have occurred. Since one of the chief characteristics of an influenza epidemic is the suddenness of its outbreak and the rapidity with which it spreads over a large area, any unusual increase in the number of reported cases of influenza in one locality is usually viewed with alarm. Miss Gover<sup>1</sup> has recently studied the epidemic of the past winter in the West South Central section of the country and elsewhere with a view to determining whether any greater outbreak is foreshadowed by the existing situation. Throughout the period of the epidemic of 1936 California was reporting more than the average number of cases of influenza for preceding years, but the curve of mortality for the Pacific section was only slightly higher than normal. By May 2 the California cases had

dropped to normal. During the five weeks from May 31 to July 4 California reported 2,177 cases of influenza as against an expectancy of 124, or an excess of 2,053 cases. A summer rise, such as this, is unusual, but there was no parallel rise in mortality, and since July 4 through September 19 California as well as the Pacific area has been reporting only an average number of cases for that season of the year. The author concludes, therefore, that although an epidemic of influenza may occur this winter, the recent mortality from influenza does not indicate that such an epidemic is in progress in any section of the country at the present time.

### THE ARMY MEDICAL LIBRARY—ONE-HUNDREDTH ANNIVERSARY

The one-hundredth anniversary of the Army Medical Library was celebrated in Washington November 16 with appropriate ceremony. High tribute was paid in a message by President Roosevelt. The librarian, Col. Harold W. Jones, reviewed its development and Surgeon General Reynolds introduced the centennial speaker, Sir Humphry Davy Rolleston, Bart., who had come from England especially for this occasion. In a scholarly address he reviewed the history of medical museums and libraries and the biographies of the great bibliographers—Billings, Fletcher and Garrison—who had been associated with the Army Medical Library in its growth. The occasion served incidentally to call attention to the pressing need for new quarters, the invaluable collection of books and documents being housed in a half-century old, non-fireproofed structure. THE JOURNAL again felicitates the Library on its marvelous record and expresses the wish that its hope for a new and suitable home may soon be realized.

### IN HONOR OF DR. HUGH TALBOT PATRICK

The issue of the *Archives of Neurology and Psychiatry* for November 1936, which has just come from the press, is a special number dedicated to Dr. Hugh Talbot Patrick by his pupils. It contains in addition to notes of appreciation by Drs. Peter Bassoe, Chicago, Bernard Sachs, New York, and Professeur Georges Guillain, Paris, contributions on neurologic topics by these writers and many others who have from time to time been associated with Dr. Patrick in his work. To Dr. Hugh T. Patrick particularly must be assigned the credit for the initiation of the *Archives of Neurology and Psychiatry* as a publication in this special field. Dr. Sachs well states that this publication has done much to place American neurology and psychiatry on the highest scientific level. It has reflected constantly the progress of American medicine in this field. In listing the contributions of Dr. Patrick, special mention is given to his articles on arteriosclerosis of the nervous system, chronic progressive hemiplegia, the motor neuron in practical diagnosis, the proper care and treatment of the patient with epilepsy, syphilis of the nervous system, and the factor of fear in nervous diseases. More recently a number of excellent contributions have indicated his interest in biography and in the historical

17. Thomas, Karl; Milhorat, A. T., and Techner, Fritz: Untersuchungen über die Hirkunft des Kreatins: Ein Beitrag zur Behandlung progressiver Muskelatrophien mit Glykokoll (Vorläufig Mitteilung), *Ztschr. f. physiol. Chem.* 205: 93, 1932.

18. Walker, M. B.: Treatment of Myasthenia Gravis with Physostigmine, *Lancet* 1: 1200 (June 2) 1934.

19. Everts, W. H.: The Treatment of Myasthenia Gravis by the Oral Administration of Prostigmine, *Bull. Neurol. Inst. New York* 4: 523 (Dec.) 1935. Laurent, L. P. E.: Clinical Observations on the Use of Prostigmine in the Treatment of Myasthenia Gravis, *Brit. M. J.* 1: 463 (March 9) 1935. Minski, Louis, and Stokes, A. B.: Treatment of Myasthenia Gravis, *ibid.* 1: 1095 (May 30) 1936. Pritchard, E. A. B.: The Use of "Prostigmine" in the Treatment of Myasthenia Gravis, *Lancet* 1: 432 (Feb. 23) 1935. Wade, H. J.: Treatment of Myasthenia Gravis, *Brit. M. J.* 1: 1099 (May 30) 1936.

20. Laurent, L. P. E., and Walther, W. W.: Influence of Large Doses of Potassium Chloride on Myasthenia Gravis, *Lancet* 1: 1434 (June 22) 1935.

21. Boothby, W. M.: Myasthenia Gravis: The Effect of Treatment with Glycine and Ephedrine; Third Report, *Arch. Int. Med.* 53: 39 (Jan.) 1934; Eighth Report, *Tr. A. Am. Phys.*, to be published.

1. Gover, Mary: Influenza Mortality in the United States, 1936, *Pub. Health Rep.* 51: 1399 (Oct. 9) 1936.

aspects of neurology. The dedication of such volumes to men of leadership who have contributed as greatly as has Dr. Hugh T. Patrick toward medical advancement is a commendable gesture in a too careless and hastening age.

## Medical Economics

### THE NATURE OF PANEL PRACTICE IN ENGLAND

#### Some Evidence from the Pages of the British Medical Journal

A series of letters from physicians in the correspondence department of the *British Medical Journal* in recent months indicates that the physicians practicing under the panel system are by no means wholly satisfied with the character of service they are required to give. The letter that started the trouble was from F. S. Taylor-Thomas,<sup>1</sup> who wrote from Australia and says:

My interpretation of the statement is that panel practice in action tends to produce the following:

Patient (entering consulting room, and taking seat on chair) "I want somethin' for this wheezin' on my chest, Doctor. I've had it for a week now. Cough at night somthin' awful."

Doctor: "Very well, take off your things and I'll examine your chest."

Patient: "Oh, never mind that, Doctor! Just give me a bottle of cough mixture—some of that black stuff—and I'll be all right. I just called in as I was passin' up the street and thought I'd better get somethin' before it gets worse."

Doctor (glancing in the waiting room a crowd of other patients who just called in as they were "passin' up the street"): "Very well. Here you are." (Hands him prescription for mist. tussis, fishes out his panel card, enters date, diagnosis, treatment, etc., "shoo's" him out to make way for another who wants something for his rheumatiz in the shoulder—and so the process is repeated.)

Well, isn't that mechanization? Is that all an M.B., B.S. or M.R.C.P. has to do? Has he any chance, or is he allowed to do much, in the ordinary conditions of panel practice? What is the general practitioner in England today but a glorified first-aid man? Quack patients beget quack doctors. It is a question, from the general practitioner's point of view, of getting as many patients as he can on his list and getting the consultations over as fast as he can. Only by such means can a living be made. If the doctor comes across an illness which may interest him, he has the time and were he reasonably paid to treat it, he simply refers the patient to the nearest hospital; insurance committees do not encourage academic excursions by general practitioners. . . . if these people who are patients had only to pay 3d. to see the doctor it would cut down England's drug bill by half.

This letter very clearly started something. The next communication, by a writer under the name of "Juvenis,"<sup>2</sup> and who is apparently a panel practitioner, adds this comment:

I am convinced the majority of panel patients do not get full enough investigation. My surgery hours are cluttered up with people who certainly would not come so often or drink so much medicine if they had to pay even one penny a visit. I cannot do otherwise than rush them through. Those who are obviously ill, or who fail to regain good health after a reasonable lapse of time, are examined more carefully at home or out of surgery hours; but this method is only a makeshift, and I remember with dissatisfaction two carcinomata of the stomach recently diagnosed too late and a latent pulmonary tuberculosis labeled neurotic.

These criticisms brought Alfred Cox,<sup>3</sup> former secretary of the British Medical Association, to the defense with this statement:

I have no doubt that "Juvenis" is sincere in his opinion about the panel system and as to the methods adopted in his practice. But I should be very sorry—and indeed I refuse—to believe that his experience is typical. I have had the good fortune to come in close contact with many busy insurance practitioners who have never had any doubt as to their ability to give their panel patients that which they contract to give—namely, a good general practitioner service.

Dr. Cox gives a statistical study of the services needed in an average panel list of 1,000 and concludes:

I submit that in a well-organized practice every patient needing it could have the thorough examination that he or she ought to have. In times of epidemics, of course, all patients have to take what it is possible to give, but in many cases detailed examination can be deferred for a time.

In a later issue another doctor<sup>4</sup> says:

I have been chairman of the Ross and Cromarty Insurance Committee for several years. I have also been chairman of the Ross and Cromarty Panel Committee for many years, and my index list is one of the largest in this area. I should thus know something of national health insurance practice, its good qualities and its bad qualities.

On the basis of this experience he gives as his opinion: "In the large majority of cases national health insurance practice is of a very high standard, and is not second to the standard of efficiency and rectitude attained by any other profession or business; otherwise, would it for one moment be tolerated by the public?" However, in the same issue Dr. Cox's statistical study is criticized with the following conclusion:

Thus Dr. Cox's own figures suggest that a rush is probably a normal state in general practice for a considerable portion of the year. Most general practitioners are only too aware of this uncomfortable period when patients, panel and private, and their medical attendants suffer from the rush of work. Dr. Cox and the travelers in statistics from the Ministry of Health appear to be uninformed of this rush period, or rather the length of its duration. . . . Again, assuming Dr. Cox's figures to be correct, we find that an attendance on a panel patient is valued at rather less than two shillings. The remedy for this unsatisfactory state of affairs, as was pointed out a fortnight ago, is a revision of fees, both private and panel.

This conclusion as to payments to physicians is confirmed by the statement of another panel practitioner in the same issue who says:

One wonders whether or not Dr. Cox is quite satisfied that the doctors receive an adequate remuneration for this "good general service," as it would appear to be more or less the consensus of opinion that the doctors themselves are not satisfied with their remuneration.

The controversy continues in the issue for October 17. One writer<sup>5</sup> comments:

Many panel patients are irresponsible individuals unfit to enter into a contract with a doctor. These time wasters and the low capitation fee cause some dissatisfaction with the national health insurance service. Is the extent of this dissatisfaction known? Prosperous practitioners occupying prominent positions are unlikely to be dissatisfied, and tend to discourage admission of misgivings by their less fortunate professional brethren. Could not a confidential questionnaire be sent to every panel practitioner so that the truth may be discovered?

"Juvenis" returns to the discussion with a further examination of Dr. Cox's calculations and adds:

A good examination in the surgery takes considerably longer than five minutes. Can any one examine a man for life insurance in five minutes? Moreover, in a practice like this, covering a scattered area of some thirty square miles, fifteen minutes per visit is too low an average of time consumption. Indeed, it is very difficult to find time and energy to read and think about my patients. And even when I do, economic considerations often restrict me to the palliative bottle of medicine. Indeed, I wonder if panel treatment is intended to be more than symptomatic. Of about one hundred formulae for mixtures in the N. H. I. Formulary some fourteen are "cough mixtures"! How many dyspeptics can afford artificial teeth? How can one get a walking caliper for a fractured neck of the femur? How can one treat the host of psychopathic cases when neither the patient's approved society nor the regional medical officer seems to care a jot about treatment?

The editor then states that it is now necessary to "close the correspondence." Quotations from two other physicians, in the same issue, are illuminating as to the attitude of some panel practitioners:

To pretend that panel and well-to-do private patients can be treated identically is to be an ostrich. Unpleasant facts must be faced. Much national health insurance practice consists of futile efforts to adapt the patient to a wrong environment by generous doses of drugs and other poisons. We are in a changing era. Public and private health are slowly merging. Perhaps in the meanwhile the national health insurance practitioner is doing useful work which will be facilitated by the gifts of hypocrisy or self deception.

While it would be unfair to stigmatize the whole profession for the misdeeds of a few of its members, nevertheless there is, I believe, an increasing tendency to practice what has been described in previous letters as mechanized medicine. For this the public are in part to blame. In this aspirin-ridden age pain must be assuaged, discomfort eased forthwith and at any price, and the excuse that one may be trying to cure the case is not always received with becoming gratitude. On the other hand, there is a type of mind—present in all ages of medicine—who will choose the easier path. They have so simplified prescribing as to resemble the famous John Brown of the eighteenth century who divided all the ills of mankind into two categories: (1) the depressed, who required stimulating, and that with alcohol; (2) the overexcited, who must be soothed, and that with laudanum. Few of the modern school, one fears, are as honest as John Brown, who, believing in the efficacy of his own prescription, died of too much alcohol by day and too much laudanum by night!

1. Taylor-Thomas, F. S.: *Brit. M. J.* 2: 562-563 (Sept. 12) 1936.

2. *Juvenis*: *Brit. M. J.* 2: 650 (Sept. 26) 1936.

3. Cox, Alfred: *Brit. M. J.* 2: 694 (Oct. 3) 1936.

4. Mackenzie, E. K.: *Brit. M. J.* 2: 740-741 (Oct. 10) 1936.

5. *Brit. M. J.* 2: 786-787 (Oct. 17) 1936.

## Association News

### THE ATLANTIC CITY SESSION

#### Symposium on Heart Disease in the Scientific Exhibit

The Committee on Scientific Exhibit has announced that an exhibit symposium on heart disease will be held at the Atlantic City session, June 7-11, 1937. The symposium, which will cover all phases of the subject, will be presented by various individuals who may have suitable material to offer and the exhibits will be open to awards. Application blanks for space may be obtained from the Director, Scientific Exhibit, 535 North Dearborn Street, Chicago.

### RADIO BROADCASTS

The American Medical Association and the National Broadcasting Company are presenting the second series of dramatized health broadcasts under the title *Your Health*. The first broadcast in the new series, the thirty-second dramatized cooperative broadcast under the title *Your Health*, was given October 13. The theme for 1936-1937 differs slightly from the topic in the first series, which was "medical emergencies and how they are met." The new series is built around the central idea that "100,000 American physicians in great cities and tiny villages, who are members of the American Medical Association and of county and state medical societies, stand ready, day and night, to serve American people in sickness and in health."

The program will go out on the Blue network instead of on the Red network, as originally announced. The announcement cards that were sent out when the program was planned for the Red network can be changed simply by substituting the word "Blue" for "Red" where it occurs.

The topics are announced monthly in advance in *Hygeia*, the Health Magazine, and three weeks in advance in each issue of *THE JOURNAL*. The topics and speakers for the next three programs are:

- December 1. "Smog." W. W. Bauer, M.D.
- December 8. Heredity and Disease. Morris Fishbein, M.D.
- December 15. Milk. W. W. Bauer, M.D.

The time of the broadcast is Tuesday afternoon at 4 o'clock central standard time (5 o'clock eastern time, 3 o'clock mountain time, 2 o'clock Pacific time).

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

### CONNECTICUT

**Society News.**—Dr. Richard E. Shope, Princeton, N. J., discussed the "Newer Knowledge of Influenza" before the Yale Medical Society, November 11, in New Haven.

**Dr. Ingraham Leaves State Board of Health.**—Dr. A. Elizabeth Ingraham, since 1923 director of the bureau of child hygiene of the Connecticut State Department of Health, Hartford, has resigned, effective January 1, and, it is reported, will retire from active public health work.

**Graduate Courses.**—The Connecticut State Medical Society and the state department of health opened a course on maternal health at the Windham Community Memorial Hospital, October 6, and the Day-Kimball Hospital, Putnam, October 7. Instructors are Drs. James R. Miller, Hartford, Emerson L. Stone, Abraham Nowell Creadick, Herbert Thoms and Luther K. Musselman, all of New Haven, and Joseph H. Howard, Bridgeport. A course in pediatrics, to be given when the one in obstetrics is completed, is in charge of a committee consisting of Drs. Grover F. Powers, professor of pediatrics, Yale University School of Medicine, chairman; James Harold Root, Waterbury, and Oliver L. Stringfield, Stamford. Instructors will be selected by this committee from the membership of the state medical society. Both courses are being financed by a social security grant.

**Personal.**—Dr. John Homans, clinical professor of surgery, Harvard University Medical School, and surgeon to the Peter Bent Brigham Hospital, Boston, has been appointed visiting professor of surgery at Yale University School of Medicine, New Haven, and surgeon-in-chief of the New Haven Hospital during the period November 1 to June 30, 1937.—Dr. Lewis A. Sexton, for twenty years superintendent of Hartford Hospital, has retired on account of ill health. With the appointment of Dr. Wilmar Mason Allen as director of the hospital, the post of superintendent was discontinued and Dr. Sexton was designated director-emeritus.—Dr. George E. Cogan has been elected president of the Hartford Board of Health, succeeding Dr. Robert V. Boyce, who recently resigned.—Dr. Samuel Green, health officer of Southbury, has presented to the Hartford Board of Health a certificate issued by the Common Council in 1878 appointing his father, the late Dr. George S. Green, a member of the board.

### DELAWARE

**Society News.**—Dr. Manfred S. Guttmacher, Baltimore, discussed "The Relationship of Psychiatry to the Courts" before the New Castle County Medical Society, November 17. Dr. Brooke M. Anspach, Philadelphia, discussed gynecologic conditions, October 20.

### ILLINOIS

**Society News.**—Dr. Joseph Brennemann, Chicago, addressed the Bureau County Medical Society at Princeton, November 10, on "Pneumonia in Childhood."—At a meeting of the Will-Grundy County Medical Society, November 11, Dr. Tell Nelson spoke on the "Management of Bronchial Asthma."—Drs. Ralph A. Reis, Chicago, and Ralph P. Peairs, Normal, discussed gynecology and medical economics, respectively, before the Livingston County Medical Society, November 12.—At a meeting of the Kankakee County Medical Society, November 12, Dr. Margaret M. H. Kunde, Chicago, spoke on "Endocrine Therapy in Menstrual Disturbances."—Dr. John de J. Pemberton, Rochester, Minn., addressed the Peoria City Medical Society, November 10, on surgery of the thyroid gland.

### Chicago

**The Ludvig Hektoen Lecture.**—Dr. Ernest W. Goodpasture, professor of pathology, Vanderbilt University School of Medicine, Nashville, Tenn., will deliver the thirteenth Ludvig Hektoen Lecture of the Frank Billings Foundation, January 22. His subject will be "Vaccinia."

**Another Window Exhibit.**—In the lobby window in the Annex Building of Marshall Field and Company is an exhibit on "feet" designed to show that foot disorders are frequently traced to systemic diseases and emphasizing that the family physician should be consulted before any corrective measures are introduced. Models are displayed to show that a shoe should be made to fit the foot rather than the foot to fit the shoe. There is also a model in plaster of the perfect foot of a child. This window has been given to the Chicago Medical Society, free of rental and service charges, for the display of health educational material. The material is prepared by the educational committee of the Illinois State Medical Society.

**Bacteriology Reviewed.**—At a meeting of the Institute of Medicine of Chicago and the Society of Medical History of Chicago, November 24, the following program was presented:

- Dr. Ludvig Hektoen, Notes on the History of Bacteriology in Chicago Prior to the Organization of Bacteriologic Teaching (about 1890).
- Dr. George H. Weaver, The Introduction of Bacteriology into the Medical Curriculum in Chicago.
- Dr. Fred O. Tonney, The Introduction of Bacteriology into the Public Health Service in Chicago.

A paper prepared for the Society of Medical History by Dr. Jacques Holinger, before his death in 1934, was read by title: "An Incident in the Development of Antisepsis and Dr. Henry Banga's Part Therein." Dr. Peter Bassoe will deliver the presidential address before the twenty-first annual dinner and meeting of the Institute of Medicine, December 1, on "A Sketch of the Development of Psychiatry and Neurology in Chicago."

**Beaumont Collection at University of Chicago.**—A collection of papers and personal effects of Dr. William Beaumont has been given to the University of Chicago by the physiologist's grandson, Ethan Allen Beaumont, and his wife, of De Pere, Wis. The collection, consisting of first editions, unpublished letters, a case history, surgical instruments, photographs and a chair presented to the Beaumonts by Robert E. Lee, who once lived with them in St. Louis, was on exhibition at the university library, November 20, together with an oil portrait of Dr. Beaumont lent by Mr. A. C. Denny of Evans-

ton. During the exhibition, addresses were delivered by Robert Maynard Hutchins, president of the university, and Drs. Anton J. Carlson, Arno B. Luckhardt and Selim W. McArthur. The program, sponsored by the Friends of the Library of the University of Chicago, was planned to coincide with the one hundred and fifty-first birthday of Dr. Beaumont, November 21.

**Fund for Study of Hospital Insurance.**—The Rosenwald Fund has given \$100,000 to the American Hospital Association to study and develop voluntary hospital insurance. The program of the association will be projected through a special committee on hospital service with C. Rufus Rorem, Ph.D., as executive director. Other members of the committee are Drs. Basil C. MacLean, Rochester, N. Y., chairman; Sigismund S. Goldwater, New York; Robin C. Buerki, Madison, Wis.; Claude W. Munger, president of the American Hospital Association, and Msgr. Maurice F. Griffin, Cleveland. According to an announcement, one phase of the work will deal with advice and consultation on existing plans and those being formed concerning actuarial data, benefits, method of organization, public relations and annual subscription rates, while a second phase will cover relations of hospital service plans to the medical profession, public welfare activities, state departments of insurance, private insurance companies, hospital administration and hospital accounting.

## IOWA

**Lectures for College Students.**—The speakers' bureau of the Iowa State Medical Society will continue this winter its policy of providing lecturers to colleges in the state. The following program has been tentatively outlined for delivery to the freshmen at Grinnell College: The Body and Its Functions, Medical Science in the Service of Health, Upkeep and Energy Supply, Digestion and Elimination, The Use of Energy in Activities, By-Products of Activity and Energy Renewal, Body Mechanics, Thermal Regulation, Cleanliness and the Appearance, Infection and Resistance, Physical and Chemical Hazards, and Reproduction and Sex.

**Regional Meetings.**—The Southeastern Iowa Medical Society was addressed in Mount Pleasant, October 15, by Drs. Alfred M. Paisley, Keokuk, on eye, ear, nose and throat conditions; Leonard P. Ristine, Mount Pleasant, neurosyphilis; George B. Crow, Burlington, degenerative heart disease, and Mazyck P. Ravenel, Columbia, Mo., immunization against the infectious diseases. Dr. Lonnie A. Coffin, Farmington, delivered his address as president, and Dr. Marcus Pinson Neal, Columbia, the address of the evening on cancer as a preventable disease.—Drs. Austin C. Davis and Harry L. Smith, both of Rochester, Minn., addressed the Southwestern Iowa Postgraduate Medical Society in Atlantic, October 9, on "Clinical Significance of Basal Metabolic Rates" and "Attacks of Unconsciousness Associated with Cardiac Diseases" respectively.

**Society News.**—Dr. Karl A. Menninger, Topeka, Kan., discussed "The Problem of Psychological Factors in Medicine" before the Pottawattamie County Medical Society in Council Bluffs, November 16. The society met jointly with the Woodbury County Medical Society, October 12; speakers were Drs. Charles T. Maxwell, "Trends in the Treatment of Diabetes"; Wayland K. Hicks, "Vaginal Ureterolithotomy," and Peirce D. Knott, "Review of 100 Cases of Anterior Poliomyelitis with Special Reference to Therapy." All the speakers are from Sioux City.—Dr. Frank A. Evans, Pittsburgh, discussed "The Physiological Background and Treatment of Obesity and Undernutrition" before the Linn County Medical Society, November 19. Dr. Elliott P. Joslin, Boston, addressed the society, October 27, on "The Management of Diabetes." Dr. Benjamin L. Knight, Cedar Rapids, spoke on "Medical Hash and Surgical Tips."

## LOUISIANA

**Society News.**—Dr. Bunnie M. McKoin, Monroe, discussed gonorrhea before the Tri-Parish Medical Society, October 6.—The Fourth District Medical Society was addressed, among others, in Shreveport, by Dr. Robert A. Strong, New Orleans, on vomiting in infancy.—The Orleans Parish Medical Society and the staff of Charity Hospital held a joint clinical meeting, October 26. The speakers included Drs. Stanford Chaillé Jamison on "Toxic Goiter in Six-Year-Old Colored Female"; Frederick F. Boyce, "Primary Streptococcus Peritonitis"; Octave C. Cassegrain and Howard R. Mahorner, "Amebic Hepatic Abscess with Rupture in the Pleural Cavity," and Roy H. Turner, "Syphilis of the Stomach." The society was addressed November 9 by Drs. Leo N. Elson on "Treatment of Trichophytosis Interdigitalis"; Howard R. Mahorner, "Clinical Aspects of Goiter," and Francis E. LeJeune showed color motion pictures of the larynx.

## MASSACHUSETTS

**Cancer Decrease in 1935.**—The deaths from cancer in Massachusetts decreased in 1935, the first time in ten years, according to the *New York Times*. In 1935 the death rate for men was 99.2 and for women 125.2, as compared with 107.2 and 129.4, respectively, in 1934. In 1920 the rate was 84.5 per hundred thousand of population for men and 128.6 for women.

**New Commissioner of Mental Hygiene.**—Dr. David L. Williams, since 1928 a member of the staff of the Veterans' Administration Facility, Bedford, has been appointed state commissioner of mental diseases to succeed Dr. Winfred Overholser. Dr. Williams graduated from Tufts College Medical School in 1906. He is 60 years of age. Dr. Overholser was named assistant commissioner of mental diseases in 1930 and commissioner in 1934.

**Huge X-Ray Machine at Huntington Memorial Hospital.**—A machine capable of producing 1,000,000 volt x-rays is being installed in the Huntington Memorial Hospital, Boston, newspapers report. It generates static electricity and makes possible the treatment of deep-seated malignant growths in the body. Six fast moving vertical belts carry negative electricity to the high voltage terminal in the doughnut-shaped top and on the downward path remove positive electricity from the terminal, depositing it at the grounded base. High speed electrons are thus generated at the terminal and are gathered through a vertical porcelain x-ray tube to be carried downward to a water-cooled gold target. This tube will extend through the floor of the generating room to a room below, where patients will be treated.

**Society News.**—Dr. Merrill Moore, Boston, discussed cases of attempted suicide in a general hospital before the Harvard Medical Society, October 27.—The Boston Pathological Society was addressed October 28 by Dr. Ernest A. Codman on "A Study of the Cases in the Registry of Bone Sarcoma of Giant Cell Tumor About the Knee."—At the annual meeting of the Massachusetts Society for Mental Hygiene in Boston, November 24, Dr. Helen MacMurphy, Toronto, Ont., spoke on "Mental Hygiene and Child Welfare."—Dr. Horace K. Sowles, Boston, will address the Pentucket Association of Physicians, December 10, on "Carcinoma of the Intestines."—M. J. Shear, U. S. Public Health Service, addressed the Suffolk District Medical Society, November 18, on "Hydrocarbons and Cancer," and Dr. Joseph C. Aub, Boston, "Cancer Research."—At a meeting of the Norfolk District Medical Society in Brighton, October 27, Drs. Thomas R. Healy, Boston, among others, discussed "Radiological Aspects of Yeast Infection of the Lungs"; Charles J. Kickham, Boston, "Recent Advances in the Treatment of Pruritus Vulvae," and John F. Casey, Boston, "Treatment of Pneumonia."—Dr. Robert A. Wilson, Brooklyn, discussed "Initiation of Respiration in Asphyxia Neonatorum" before the Obstetrical Society of Boston, October 20.

## MICHIGAN

**Dr. Kellogg Honored.**—A dinner was held in honor of Dr. John Harvey Kellogg, Battle Creek, October 19, marking his completion of sixty years as head of the Battle Creek Sanitarium. Oct. 1, 1876, the year following his graduation from Bellevue Hospital Medical College, Dr. Kellogg took over the management of the Health Reform Institute, now known as the Battle Creek Sanitarium. He is 84 years of age.

**A New Dramatic Broadcast.**—A campaign to eradicate tuberculosis from Detroit was recently launched under the cooperative efforts of the Wayne County Medical Society, the Detroit Tuberculosis Sanatorium Association, the *Detroit News*, Radio Station WWJ, the Detroit Department of Health, and Paul de Kruijff. One feature of the program is a weekly broadcast of "Death Fighters," a dramatic story the plot of which has been taken from the records of one of the city's hospitals. The initial presentation was given Wednesday evening November 11. The theme shows the struggle of science against the ignorance and indifference with which tuberculosis has been treated in the past. Short daily dramatic broadcasts will be offered for a time to supplement the evening weekly broadcast. The *Detroit Medical News* reports that 528 physicians have registered in the campaign, which seeks to detect tuberculosis in the incipient stage. It was pointed out that during September 47 per cent of the newly found cases were in the far advanced stage. November 18 marked the opening of a series of graduate courses on the subject at the Herman Kiefer Hospital, to be held each week.

## MINNESOTA

**Personal.**—Dr. George B. Weiser, New Ulm, was guest of honor at a banquet recently, given by the Redwood-Brown County Medical Society, in recognition of his completion of forty-three years of practice in New Ulm. Dr. Weiser practiced fourteen years in Pennsylvania before coming to New Ulm. He graduated from Jefferson Medical College in 1879. —Dr. Homer P. Basinger has been appointed health officer of Windom, succeeding Dr. Albert L. Pertl, resigned.

## MISSISSIPPI

**Supervisor of Health Education Appointed.**—Mrs. Eva Moore Adams has been appointed supervisor of health education, a newly created position in the state board of health. The health education division plans a careful survey of health needs and health problems in the state before adopting a definite program, which will be projected through the radio, newspapers and other mediums. The state department of health will soon begin the publication of a bulletin, which will be edited by Mrs. Adams.

## MISSOURI

**Director of Communicable Diseases Resigns.**—Dr. Eldred K. Musson, Jefferson City, has resigned as director of the division of communicable disease control of the Missouri State Department of Health, effective October 31. He will accept a similar position with the Kansas board of health, newspapers reported.

**Hospital News.**—Trinity Lutheran Hospital, Kansas City, observed the thirtieth anniversary of its founding during the week of October 19. The hospital admitted its first patient Oct. 29, 1906; 225 patients were hospitalized during the first year. Of the original medical staff the following are still active: Drs. Frank J. Iuen, William C. Iuen, Hal Foster, Minford A. Hanna, Carl A. Jackson and Theodore S. Blakesley.

**Society News.**—The Jackson County Medical Society was addressed November 10 by Drs. Wendell Stewart, East St. Louis, Ill., on "Pneumoconiosis with Special Reference to Silicosis," and Orville Harry Brown, Phoenix, Ariz., "What Every Physician Should Know About Clinical Allergy." —Drs. Franz J. Arzt and Garold V. Stryker, St. Louis, addressed the Marion-Ralls County Medical Society in Hannibal, October 9, on "Treatment of Subacute Pelvic Inflammation" and "Skin Signs of Hypovitaminosis" respectively. —The St. Louis Medical Society was addressed, November 10, by Drs. Julius Jensen and Carl R. Wegner on "Significance of High Blood Pressure in Pregnancy," and Jonas Curtis Lyter, "Angina Pectoris of Effort and Associated Phenomena."

**Dr. Coughlin Honored.**—Dr. William T. Coughlin, St. Louis, head of the department of surgery, St. Louis University School of Medicine, was guest of honor at a dinner given by the school, November 12, in recognition of his completion of twenty-five years' service on the faculty. Dr. Coughlin graduated from Washington University School of Medicine, St. Louis, in 1901, serving on the faculty there from 1901 to 1911, when he went to the St. Louis University School of Medicine as assistant professor of surgery. He was made head of the department in 1920. He was presented with a volume of letters of congratulation, and a collection of books is to be assembled at the university library in his honor. Other guests of honor at the dinner who have also completed twenty-five years' service on the faculty were Drs. Carl Barck, Louis C. Boissiniere, Jules M. Brady, Edward P. Buddy, Cyrus E. Burford, John McH. Dean, William P. Glennon, William W. Graves, Alexander E. Horwitz, Joseph M. Keller, William E. Leighton, Bransford Lewis, Augustin P. Munsch, Louis Rassieur, Carroll Smith, Percy H. Swahlen, Frank J. Tainter, Ralph L. Thompson and Hillel Unterberg. Rev. Alphonse M. Schwiltalla, S.J., dean of the school, presided, and Dr. Loyal Davis, head of the department of surgery, Northwestern University Medical School, Chicago, spoke on "Early Contributions of the Middle West to Surgery." The president of the university, Rev. Robert S. Johnston, also spoke.

## NEW JERSEY

**Society News.**—Dr. Oliver H. Perry Pepper, Philadelphia, addressed the Atlantic County Medical Society, Atlantic City, November 13, on "Diseases of the Esophagus from the Viewpoint of the Internist." —Dr. Warren B. Davis, Philadelphia, addressed the Hudson County Medical Society, Jersey City, November 4, on "Congenital and Acquired Deformities of the Face and Their Surgical Repair." —Dr. Arthur F. Coca, Pearl River, N. Y., addressed the Bergen County Medical Society, November 10, on "The Newer Antibodies."

## NEW YORK

**Educational Campaign on Cancer.**—The Westchester Cancer Committee conducted an educational campaign during October, concentrating on cancer of the breast. Pamphlets on this form of the disease were distributed through clubs and fraternal organizations and a special feature was a dinner attended by about 125 teachers of biology and science, superintendents of schools and physicians. A Westchester Institute of Science was organized to meet twice a year to hear cancer authorities and relay their messages to high school and college students. Clarence C. Little, Sc.D., director of the American Society for the Control of Cancer, Bar Harbor, Maine, and Dr. George T. Pack, New York, were the speakers at the dinner.

**Conference at University of Rochester.**—The University of Rochester School of Medicine and Dentistry presented a postgraduate medical conference, November 5-7, to alumni and other physicians of that section of the state. The medical faculty conducted in Strong Memorial Hospital clinical demonstrations, outpatient clinics, clinical pathologic conferences, bedside rounds and operative clinics. There was a dinner Friday evening November 6 at which Dr. Floyd S. Winslow, Rochester, president of the Medical Society of the State of New York, was toastmaster. Later the guests attended the Eastman Memorial Lecture delivered by Dr. Russell L. Haden, Cleveland, on "Clinical Manifestations of Nutritional Deficiency Diseases."

**Society News.**—Dr. Elmer B. Freeman, Baltimore, addressed the Glens Falls Academy of Medicine, October 16, on "The Practical Value of Special Diagnostic Methods in the Study of Digestive Diseases." —Dr. Edward C. Reifstein, Syracuse, addressed the Onondaga Medical Society and the Syracuse Academy of Medicine, November 17, on "The Significance of Heart Murmurs" and Dr. Tracy L. Bryant reported two cases of gas gangrene. —Dr. William D. Johnson, Batavia, addressed the Oswego County Medical Society, Oswego, November 12, on "Acute Diseases of the Abdomen." —Dr. Gershom J. Thompson, Rochester, Minn., among others, addressed the Western New York and Ontario Urological Society, which met at the Robert Packer Hospital, Sayre, Pa., October 10, on transurethral prostatectomy.

## New York City

**Hospital News.**—The family of the late Dr. Max Rosenthal recently made a gift of \$5,000 to Sydenham Hospital for a fellowship fund to finance research in medical problems. Announcement of the gift was made at the unveiling of a bronze tablet to the memory of Dr. Rosenthal, who died April 3. He was a founder of the hospital and formerly president of the medical board. —Dr. George T. Pack lectured at a clinical conference of the Memorial Hospital of Queens, November 24, on recent advances in cancer research.

**Medical-Dental Joint Meeting.**—The sixth annual Medical-Dental Convention arranged by the Joint Committee of the Organized Medical and Dental Professions of New York will be held at the Hotel Pennsylvania December 7. The morning speakers will be Dr. Samuel Feldman, on "Diseases of the Oral Cavity of Medical and Dental Interest" and Bernhard W. Weinberger, D.D.S., "Medical Problems in Orthodontia." The afternoon session will be a clinical meeting with presentation of patients. In the evening Dr. Hayes E. Martin will address the assembly on "The Responsibility of the Dental Profession in the Early Diagnosis of Intra-Oral Cancer."

**Eyeglasses for Persons on Relief.**—A clinic operated by four ophthalmologists has been placed in service by the Emergency Relief Bureau to expedite the distribution of eyeglasses to persons on relief. It is estimated that about 11,000 school children need glasses and that many adults have missed opportunities for reemployment for lack of them. Under the new plan the eye clinic will rotate among eight district relief offices covering all five boroughs. Relief recipients are given appointments at the nearest offices, thus lightening pressure on hospital clinics and reducing the delay in distribution of the glasses from five weeks to one week. The bureau is distributing about 200 pairs of glasses a week at a cost of \$2.11 a pair. It is also filling prescriptions for home relief recipients who have been examined by ophthalmologists in public and private hospitals, provided the prescriptions fall within the bureau's eligibility rules as to vision and employability.

**Society News.**—At a meeting of the New York Gastroenterological Association, November 17, the speakers were Drs. Henry A. Rafsky, on "A Study of the Glycemic Response in Patients with Biliary Tract Disease"; Reuben Ottenberg and

Ralph Colp, "Diagnosis of Surgical Jaundice," and Eilif C. Hanssen, "The Present Status of the Typhoid Carrier."—A symposium on sterilization was presented at a meeting of the section of obstetrics and gynecology of the New York Academy of Medicine, November 24, by Drs. Benjamin P. Watson, Eliot Bishop, Ira I. Kaplan, John H. Wyckoff and Foster Kennedy; Marie E. Kopp, Ph.D., and William J. McWilliams, counsel for the National Committee on Maternal Health.—Dr. Irving Schwartz addressed the New York Roentgen Society, November 16, on "Roentgenology of the Sinuses and Skull."—Drs. Boris M. Fried and Wolfgang Grethmann addressed the New York Pathological Society, November 19, on "The 'Primary Complex'—Initial Lesion in the Childhood Type of Tuberculosis" and "Pathogenesis of Tuberculosis as a Systemic Disease" respectively.—Drs. Joseph Felsen and Albert A. Berg addressed the Medical Society of the County of Kings, November 17, on chronic bacillary dysentery.

### PENNSYLVANIA

**Society News.**—Dr. Frederick J. Bishop, Scranton, addressed the Northampton County Medical Society, Easton, November 20, on "Closer Cooperation Between Professional Men."—Dr. John B. Lowmes, Philadelphia, addressed the Montgomery County Medical Society, Norristown, November 4, on problems in urology.

#### Philadelphia

**Society News.**—Dr. Nathan Chandler Foot, New York, was the guest speaker at a meeting of the Pathological Society of Philadelphia, November 12; his subject was "A Criticism of Laboratory Routine in Modern Institutions of Pathology."—Dr. Ralph M. Tyson, Dr. Henry Harris Perlman and Earl A. Schrader, M.S., among other speakers, addressed the Philadelphia Pediatric Society, November 10, on "Drugs Transmitted Through Breast Milk: Part I. A Study of Laxatives."—Dr. Linwood D. Keyser, Roanoke, Va., addressed the Philadelphia Urological Society, October 26, on "Pathogenesis of Urinary Calculi; Experimental and Clinical Survey."

**Changes at College of Pharmacy.**—Charles H. La Wall, Ph.D., for many years dean of pharmacy and formerly professor of theory and practice of pharmacy at the Philadelphia College of Pharmacy and Science, has been appointed professor of pharmacy. He retains the deanship. Ivor Griffith, Ph.M., associate professor of pharmacy, has been made assistant dean of pharmacy and professor of theory and practice of pharmacy. Arthur Osol, Ph.D., has been appointed director of chemical laboratories to succeed Prof. Frank X. Moerk, Ph.M., who became emeritus director. Adley B. Nichols, Ph.D., has been advanced to the rank of associate professor of pharmacy; John N. McDonnell, Sc.D., and Linwood F. Tice, M.S., have been made assistant professors of pharmacy, and Joseph W. E. Harrison, Ph.D., has become assistant director of biologic assaying.

### RHODE ISLAND

**Society News.**—Dr. George W. Waterman, Providence, addressed the Pawtucket Medical Association, October 15, on "Pituitrin—Its Uses and Abuses."—At a meeting of the Rhode Island Medicolegal Society, October 29, Joseph H. Hagan, chief of the division of probation and parole, state department of public welfare, spoke on "Understanding the Delinquent."

**Clinic Day.**—Memorial Hospital, Pawtucket, held its annual clinic day November 4. Clinics were conducted by the staff in the morning and the following program of addresses was presented in the afternoon:

- Dr. Claude F. Dixon, Rochester, Minn., Surgical Management of Carcinoma of the Colon.
- Dr. John Eiman, Abington, Pa., Observations on Hypochloremia and Hyperchloremia.
- Dr. George M. Piersol, Philadelphia, Importance of Restoring and Maintaining Proper Chemical Balance in Chronic Renal Conditions.
- Dr. Henry L. Rockus, Philadelphia, Regional Ileitis and Ileocolitis.
- Dr. Harry B. Wilmer, Philadelphia, Glucose Tolerance and Metabolism in the Allergic Individual.
- Dr. William D. Stroud, Philadelphia, Result of Five Years' Study at Pennsylvania Hospital of Various Digitalis Preparations and the Present Attitude Toward Digitalis in the Treatment of Cardiovascular Disease.

### TENNESSEE

**Clinical Meeting in Chattanooga.**—A clinical congress was held by the Chattanooga and Hamilton County Medical Society October 15 at the Hotel Patten in Chattanooga. The guest speakers were Drs. Ray M. Balyeat, Oklahoma City; Hal M. Davison, Atlanta; Barney Brooks, Nashville, and Wilson L. Williamson, Memphis, president of the Tennessee State Medical Association.

**Society News.**—Dr. Claude C. Coleman, Richmond, Va., was the guest speaker at a meeting of the East Tennessee Medical Association in Cleveland, October 6, on "Diagnosis and Treatment of Brain Tumors." Among other speakers were Drs. Edward T. Newell, Chattanooga, on "Fractures and Dislocations of the Spinal Column"; Milton Smith Lewis, Nashville, "Treatment of Eclampsia," and Estill L. Caudill, Elizabethton, president of the society, "Acute Intestinal Obstruction."

### VERMONT

**Society News.**—Dr. Gregory Zilboorg, New York, addressed the New England Society of Psychiatry at its fall meeting in Brattleboro, October 8, on "Borderlines of Knowledge in Present-Day Psychiatry."

### WISCONSIN

**Dr. Sleyster Honored.**—The Medical Society of Milwaukee County sponsored a dinner to Dr. Rock Sleyster, Wauwatosa, Chairman of the Board of Trustees of the American Medical Association, November 14, at the Wisconsin Club, Milwaukee, in honor of his thirty-three years of service to organized medicine. Dr. Arthur J. Patek, Milwaukee, was toastmaster and the speakers were Drs. Charles Gordon Heyd, New York, President of the American Medical Association; Olin West, Chicago, Secretary and General Manager of the Association; Morris Fishbein, Chicago, Editor of THE JOURNAL; Stephen E. Gavin, Fond du Lac, president of the State Medical Society of Wisconsin; Eben J. Carey, dean, Marquette University School of Medicine, Milwaukee; Arthur W. Rogers, Oconomowoc; Chester M. Echols, president of the Medical Society of Milwaukee County; J. Gurney Taylor, Milwaukee; the Rev. Anthony F. Berens, S.J., regent of Marquette University School of Medicine, and Dr. Sleyster. In 1903 Dr. Sleyster became secretary of the Calumet County Medical Society, continuing six years. He was elected assistant secretary of the State Medical Society of Wisconsin in 1910 and secretary in 1914. He remained as secretary until 1923 and was elected president in 1924. Since 1925 he has been treasurer of the society. From 1918 to 1923 Dr. Sleyster was editor of the *Wisconsin Medical Journal*. From 1915 to 1926 he served as delegate to the American Medical Association and the last four years of that period was vice speaker of the House of Delegates. He has been a Trustee since 1926 and chairman of the Board since 1935. Dr. Sleyster was graduated from the University of Illinois College of Medicine, Chicago, 1902. He is medical director of the Milwaukee Sanitarium, Wauwatosa, a fellow of the American College of Physicians, a member of the American Psychiatric Association, the Association for Research in Nervous and Mental Diseases and the Central Neuropsychiatric Association.

### GENERAL

**Lectureship in Honor of C. Jeff Miller.**—The South-eastern Surgical Congress has established a lectureship in honor of the late Dr. C. Jeff Miller, New Orleans, who was president of the congress at the time of his death. The lecture will be given annually during the regular convention of the congress. Dr. William D. Haggard, professor of clinical surgery, Vanderbilt University School of Medicine, Nashville, will deliver the first lecture in Louisville, March 8, 1937.

**The Jacobi Fellowship.**—The Women's Medical Association of the City of New York offers the Mary Putnam Jacobi Fellowship of \$1,000 for one year for postgraduate work in the medical sciences. The fellowship is open to any woman graduate of an approved medical school. The recipient must give full time to the study of a special problem, preferably abroad; if the recipient is not a resident of the United States, the study should be made in the United States. Applications for 1937-1938 should be filed with the chairman of the committee on or before April 1, 1937. A report for publication will be required at the completion of the fellowship. The chairman of the committee is Dr. Annie S. Daniel, New York Infirmary, 321 East Fifteenth Street, New York.

**Society News.**—Dr. Charles V. Craster, Newark, N. J., was chosen president of the International Society of Medical Health Officers at its meeting in New Orleans, October 21. Drs. Eugene L. Bishop, Knoxville, Tenn., and A. G. Brito, Mexico City, were elected vice presidents and Dr. Francis E. Harrington, Minneapolis, was reelected secretary.—Dr. Joseph C. Brugman, Seattle, was elected president of the North Pacific Orthopedic Society at its annual meeting in Spokane, Wash., in September. Dr. Edward A. LeCocq, Seattle, was elected secretary.—The Pacific Northwest Society of Pathologists held its semiannual meeting in Spokane, Wash., October 10.

The subject discussed was "Lesions of the Kidney." Dr. Mathew M. Patton, Spokane, was elected president and Dr. James D. Edgar, Spokane, secretary.

**Bequests and Donations.**—The following bequests and donations have recently been announced:

Bridgeport Hospital, Bridgeport, Conn., \$25,000 for the establishment of a free bed for indigent residents of Fairfield.

Chambersburg Hospital, Chambersburg, Pa., \$2,500 by the will of the late M. C. Kennedy.

Bronx and Beth Israel hospitals, New York, \$10,000 each, and Montefiore Hospital, New York, \$5,000 by the will of I. Miller.

New York Orthopedic Dispensary and Hospital, \$7,000 in trust bequeathed by Ella Lyon Dayan.

St. John's Riverside Hospital, \$50,000, and the Yonkers General Hospital, \$25,000, Yonkers, N. Y., by the will of Miss Mary Colgate.

Children's Hospital, Cincinnati, a residuary estate estimated at \$250,000 by the will of Mrs. Annie L. Dana.

Mount Sinai Hospital, New York, \$50,000 and New York Medical College and Flower Hospital \$10,000 from the estate of the late Charles Strauss.

Philadelphia Children's Hospital, \$10,000 by the will of the late Howard Fuguet.

New York Post-Graduate Medical School and Hospital and Babies' Hospital, New York, each one sixth of an estate estimated at about \$2,000,000 left by Miss Gertrude S. Thomas; she also bequeathed \$5,000 to the New York Eye and Ear Infirmary.

**National Society for the Prevention of Blindness.**—The annual conference of the National Society for the Prevention of Blindness will be held at the Deshler-Wallick Hotel, Columbus, Ohio, December 3-5. Sessions will be devoted to a discussion of saving eyesight in industry, eye health in relation to social work, eye health of college students, the nurses' approach to eye health, teacher education in eye health and sight-saving classes in the public schools. There will be a forum on "Rehabilitation vs. Relief," with Lewis H. Carris, New York, managing director of the society, as discussion leader. Speakers will include:

Dr. Carl E. Rice, consultant, Social Security Board, Washington, D. C.  
Dr. Ruth Boynton, University of Minnesota Medical School, Minneapolis.

C. Edith Kerby, statistician, National Society for the Prevention of Blindness, New York.

Dr. Claude S. Perry, Columbus, Ohio.

There will be a dinner meeting sponsored by the Columbus Academy of Medicine, with Dr. Edward Jackson, emeritus professor of ophthalmology, University of Colorado School of Medicine, Denver, as the speaker. His subject will be "Guarding the Sight of School Children." Audrey M. Hayden, executive secretary of the Illinois Society for the Prevention of Blindness, will address a luncheon meeting on "Selling Sight-Saving Classes to the Public." The annual meeting of the national society will be held at the Russell Sage Foundation Building, New York, December 11.

**Changes in Status of Licensure.**—The California Board of Medical Examiners recently reported the following:

Dr. Herman Gordon Bayless, Los Angeles, placed on probation for five years, during which time he shall not have or apply for a narcotic permit or have narcotics in his possession.

Dr. Leman Dow Cruick, La Mesa, restored to practice but not permitted possession of a federal narcotic tax stamp or the use of narcotics.

Dr. Milton M. Kay, Shafter, placed on probation for five years, during which time he shall not apply for or have a federal narcotic tax stamp or have narcotics in his possession.

Dr. William J. Kinsley, San Diego, license restored but not permitted to apply for a federal narcotic tax stamp or the use of narcotics.

Dr. Frederick H. C. Olberg, Redding, placed on probation for five years during which time he shall not have or apply for a federal narcotic tax stamp nor have narcotics in his possession.

Dr. William B. Payton, Riverside, placed on probation for five years, during which time he shall not apply for or have a federal narcotic tax stamp or have narcotics in his possession.

The Massachusetts Board of Registration in Medicine announces the following:

Dr. Frank S. Parsons, Dorchester, license restored; it had been revoked March 10, 1927.

Dr. Percy W. Carr, River Street, Boston, license restored; it had been revoked April 26, 1934.

The New Mexico Board of Medical Examiners recently reported the following action:

Dr. John Lawrence Kirby, whose last known address was Shreveport, La., license restored October 14; it had been revoked Oct. 14, 1935, for narcotic violations.

The New York State Board of Medical Examiners reported the following action, taken September 21:

Dr. James Morris Hackett, Leonia, N. J., license revoked because of his conviction of a felony.

The State Board of Medical Education and Licensure of Pennsylvania recently reported the following action:

Dr. Richard Paul Jahnis, Reading, license restored October 23; it was suspended April 16 because of narcotic violations.

The State of West Virginia Public Health Council recently reported the following:

Dr. John B. Rosier, Salem, license revoked October 14, because of narcotic violation.

Dr. Elibugh H. Kile, Flatwoods, license restored; it had been revoked March 13, 1934, for narcotic violations.

## FOREIGN

**Personal.**—Dr. John Mellanby, Waynflete professor of physiology at the University of Oxford, and Lord Balfour of Burleigh have been appointed to the Medical Research Council in succession to Prof. Edgar D. Adrian and the Marquess of Linlithgow, who retired September 30. Lord Balfour of Burleigh has been made chairman.

**Congress on Military Medicine.**—Thirty nations were represented at the sixth session of the International Office of Documentation of Military Medicine in Geneva, Switzerland, October 12-14. Among the subjects discussed were comparative studies of medical service units in various countries; field instruction of medical units in the Swiss army; the psychologic background of the aviator; principles and means of evacuation in a combat division; panic as a war phenomenon; psychiatry in an army. The session adopted a resolution urging revision of the laws of war, which is now the subject of study by a commission created by the permanent committee of the International Congress of Military Medicine and Pharmacy (THE JOURNAL, May 23, p. 1828). The next meeting of the International Office of Documentation will be held during the ninth International Congress of Military Medicine and Pharmacy in Bucarest in June 1937.

## Government Services

### Report of Food and Drug Administration

Staple drugs showed a 91 per cent conformity to official standards of strength and purity during the past year, according to the annual report of the Food and Drug Administration. A survey carried out in the spring of this year, in which the output of 399 manufacturers was sampled, showed that in 2,246 containers analyzed, only twenty-four were below the standard of the U. S. Pharmacopeia. Unofficial drugs showed a greater violation; of 2,626 samples examined (the output of 374 manufacturers), 171 departed from the composition or potency noted on their labels.

An unusual problem in the work of the administration this year was disposition of food and drugs soaked by polluted water during the floods of last winter and spring, in which the department cooperated with federal, state and local officials. The report states that in 140 towns and cities visited by federal inspectors 1,385 carloads of water-soaked foods and drugs were kept under surveillance. Seizure under federal law was necessary in only ten instances, involving forty-one tons of stock feeds, coffee, butter, shortening, candy, cheese, breakfast foods and flour. It was estimated that about 50,000 tons of food and drugs were destroyed in the flood area.

Improvement was reported in conformity to limits established for poisonous spray residues on fruits and vegetables. The arsenic tolerance was almost universally met and most foods were found to be practically free from lead, except for accidental and preventable contamination. In 66,632 samples taken, only 146 seizures were necessary as compared with 334 in the previous fiscal year.

Canned salmon, previously showing continual improvement, was exceptionally bad, the report says. Thirteen hundred samples were taken and 294,000 shipping cases were seized. Only five seizures were made of canned tuna fish and canned mackerel was of uniformly high quality. Importations of cocoa beans, nuts, spice seeds, dates and figs were carefully supervised during the year, more than 20 million pounds being denied entry because of dirt or decomposition.

Substitution of "tea seed oil" for olive oil was detected by means of a chemical test developed by an administration chemist and 13,658 gallons of the so-called olive oil was rounded up.

A comparable fraud in the substitution of isopropyl alcohol for ethyl alcohol in "rubbing alcohol" was also run down during the year. Twenty thousand bottles were seized under a provision of the law that isopropyl alcohol preparations intended for external bodily use must show the exact nature of the article without accompanying words or trade names that would tend to confuse the product with ethyl alcohol, it was stated in the report.

During the year the administration found illegal 2,683 samples from interstate shipments of foods and drugs. Of these 2,092 were of foods and stock feeds and 591 medical and other drug preparations.

## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Oct. 17, 1936.

#### The Importance of Poise in a Mad Europe

In his presidential address to the Royal Medical Society of Edinburgh, Lord Horder dealt with some of the social problems of the day from the physician's standpoint and even touched on international ones. He emphasized the view that physicians could make useful contributions toward happiness and so indirectly toward health. There was a considerable overlap between these two things. He was not sure that they could do much more than had been done along the more hackneyed lines of preventive medicine, which had made good in the main. We lived longer and more healthily than we ever did. But that was not all. When he arrived at New York a few months ago, representatives of the press crowded into his cabin and asked him whether medicine had done anything recently (meaning during the past few days) to prolong life. He replied: "Surely we live long enough, isn't the problem how to live more happily?" In this the physician could help in several ways by his special knowledge and by his personal influence. There was the ministry of health and the department of health. Surely there could be a ministry and a department of public happiness. With such an ideal ministry of happiness would not the political hyperpyrexia of recent days in the east end of London (produced by a facist demonstration) and some states of political and social stress in other places be its concern rather than that of the home office (the police)? There was too much canned food for the mind.

However, whether through ministries and departments of health or by other corroborate means, the medical profession must take its share in the work. The times were critical. They were made so by the sense of imminent risk of a conflagration which a few cool heads were doing their utmost to avert. If we failed to keep our poise as a nation we might precipitate the pandemonium. Such a failure would be largely because we had too long neglected the simple factor of public happiness through the avenue of public health. For the physician there could be no left or right. For him there was expert knowledge, a rooted adherence to truth and horse sense. That British mixture was their equipment in what was perhaps the most lethal fight they had ever, as individuals and as a body, had to face, the fight for stability of mind and of body in the interest not only of national existence but of the existence of civilization. The position facing us was appalling.

He would state the desiderata in terms that were clear, however crude: 1. Enough of the right food in the belly. But it was no use telling people to drink more milk if they could not get it. At present milk costs 4 cents a gallon for making walking-stick handles and 20 cents a gallon for human food. The problem of distribution must be tackled. 2. Easy access to fresh air. 3. Shelter at a rent that left something to buy food. 4. Leisure for play, and that might lead to thinking, even high thinking. 5. Noise control.

The answer to the question why they should try to secure physical health and happiness of the people was in order that we should preserve our mental poise while large sections of humanity were losing it. This mental poise, if only we could keep it, might save civilization. But if we developed national hysteria or national hypochondriasis, this unique opportunity would be lost forever. We were told that other nations had ideals and that these stimulated them to fitness and efficiency. But we British had an ideal too that was more dearly cherished by the universal heart of mankind and therefore had more

permanence than any determined by a merely temporary objective. The deep and fundamental note in our ideal was freedom. Would that a voice oracular might peal and waken us to the realization that to maintain this ideal we must be happy.

#### The Mental Health Service

In its annual report, the board of control (the body appointed by government to control the care of mental patients) notes with satisfaction the increased proportion of patients admitted to mental hospitals without certification. The steady increase in the number of voluntary patients affords a striking refutation of the criticism, often made, that no one would enter the hospitals except by compulsion. Before the recent regulation which admits voluntary patients, admission was only on certification of insanity by two physicians. The stigma of this was so objectionable to the family of the patient that it was avoided as long as possible, with the result that the opportunity for hospital treatment in the early stage was lost.

Outpatient centers are increasing in number, but in some areas the intervals between sessions are much too long. The remedy for this is to increase the staff, not to decrease the number of sessions, for persons in the incipient stages of mental trouble are "shy creatures" and will not readily give their confidence to a physician who can see them only once a month. It is pointed out that outpatient centers cost little to maintain and are the best investment a visiting committee can make, for they will save many patients from the need of inpatient treatment.

The necessity for the appointment of trained social workers to assist the medical staff of outpatient centers and mental hospitals, and their value as links between the medical staff and the patients' homes, in relation both to treatment and to after-care, is emphasized. The diet in mental hospitals is generally good in quality and adequate in quantity, but regret is expressed that no experiment has yet been made with the cafeteria system, adopted in the United States, with a view to making the meals more attractive and improving the service. The essence of this system is that on entering the dining room the patient is given a plate which he takes to the service counter, where he is offered a choice of dishes. It might be supposed that it would lead to waste to offer patients a choice of food, but in practice it has been found that, with a little experience, the relative popularity of different dishes can be estimated. The board deplores the fact that in some mental hospitals clothing of a definitely institutional type continues to be supplied even to the better behaved women patients.

Jan. 1, 1936, the number of persons suffering from mental disorder—voluntary, temporary and certified patients—was 153,771, an increase of 1,682 over the previous year. The average annual increase for the five years that ended in 1935 was 1,714. The increased number of notified patients does not imply an increase of insanity in the general population. Of the total admissions to public mental hospitals, 24.1 were voluntary, 5.2 temporary and 70.7 certified. The increasing advantage taken of the recent introduction of voluntary admission is shown by the fact that the percentage in 1931 was only 7.1.

#### The Automatic Control of Radium

At the Westminster Hospital, where special attention has been given to radium therapy for some time, an important advance in technic has been made. The new installation incorporates a system of distant control for the better protection of operators and has allowed larger "bombs" to be used. Additional radium has been acquired to give effect to the conclusion earlier reached by the surgeons in charge of the radiotherapy department that deeper penetration can be obtained by removing the radium to a greater distance from the point of application. Four grams of radium, valued at about \$200,000, is used and is carried alternately by two bombs. By a system of auto-

matic electrical control the radium in its container can be lifted from a leaden safe into one of the bombs and swung into position over the patient. The electrical switchboard is situated 14 feet from the patient's couch. The two bombs and the radium container are made of a heavy ray-proof metallic compound recently invented. The installation, which has involved months of experimental construction and the use of expensive metals and special tools, has cost about \$4,000 apart from the radium.

#### Improved Plague Vaccine

As the result of recent discoveries at the Haffkine Institute of Bombay, a vaccine has been produced for the treatment of plague of which the protective power is increased thirtyfold. Work has been going on at the institute on the measurement of the virulence of plague cultures, and biologic methods for the standardization of plague vaccine have been evolved. This is claimed to be the first successful standardization of bacterial antigen. With a serum of the great potency thus achieved, from 70 to 80 per cent of experimentally infected animals can be saved, whereas failure has hitherto attended the use of the serums on the market. Trials in the use of the new serum in human cases are now in progress. Preliminary reports show that while the mortality in untreated cases is 76 per cent, that in treated cases has been reduced to 18 per cent.

#### Experiment with Substandard Army Recruits

An experiment with substandard army recruits is being watched with considerable interest and, if successful, its scope will probably be extended. At present thirty-two men, all of whom in one way or another did not reach the necessary standard on enlistment, have reached the twelfth day of a course that is to last three months. Yet already careful training, proper food and specialized exercises have effected a marked improvement. They are more mentally alert, they have put on weight, and their chest measurements have increased. The average increase in weight is  $2\frac{1}{2}$  pounds (1,135 Gm.). It is expected that if the present rate of progress continues the great majority of the recruits will be passed as fit for service at the end of the course. Nine of the men failed to reach the required chest measurement. One man who had been a kitchen porter had no chest expansion whatever. He has shown the greatest increase, 1 inch, while the average increase is half an inch. The normal daily ration allowance has been supplemented by extra milk and fresh fruit. Special games, physical training, remedial exercises and education figure in the course, with long walks in the country on Sundays.

#### The Smoke Evil

Presiding at the conference of the National Smoke Abatement Society, Sir George Newman, formerly chief medical officer of the ministry of health, said that he had always been impressed with the backwardness of this country in not controlling the smoke nuisance. We were very backward compared with our neighbors across the channel. Sir Leonard Hill (the physiologist) said that we had pure water and good drainage and now we must have clean air. It was far less costly to prevent than to cure disease. We lost the genial warmth and light of the sun by our dirty air. Exposure of the skin to sunlight increased the disease-resisting powers of the body, but our smoke-polluted cities interfered with this. Sir Henry Gauvain, the pioneer in this country of the open-air treatment of tuberculosis, spoke on "Light and Clean Air in Relation to Surgical Tuberculosis." He said that it was common fallacy to imagine that where sun treatment was indicated the patient should be sent to a very sunny locality where there was intense and continuous sun of high actinic value. For very strong, dark adults capable of responding to intense exposure, that was commendable. But for the majority of sick people initial weak stimulation was preferable. There were

few countries where sun treatment might be practiced under more ideal conditions in the spring and summer than in the south of England, where abundant sunshine for therapeutic purposes was available, sometimes largely in excess of the patient's need.

#### Medical School at Oxford

Lord Nuffield, automobile manufacturer, has made the munificent offer of \$6,250,000 to Oxford University for the establishment of a graduate medical school, which has been gratefully accepted. He has previously shown great interest in medical work by his benefactions to hospitals and otherwise. By discussion with the leaders of the medical profession he is well acquainted with the problems of practice and of research. He realizes that progress in medical science is reaching a stage at which it is desirable for those who work in the field of research to undergo a period of postgraduate training in modern methods of investigation, to keep in close touch with the sciences ancillary to medicine and to pursue their studies unhampered by the cares of private practice and routine teaching. Thence it is an easy step to the conception that a postgraduate medical school in a university town, in which all the scientific departments are within easy reach of the hospitals and in which the coordination of health services are established, would improve the facilities of those engaged in clinical work, whether institutional or that of general practice. In his presidential address at the recent meeting of the British Medical Association at Oxford, Sir Farquhar Buzzard spoke of the development of such a school at Oxford as an ambitious dream, thus filling the one conspicuous gap in the system of medical services. There is already at Oxford an Institute of Medical Research on a small scale, which Lord Nuffield founded. It is largely due to him that the Oxford hospitals have been reequipped and enlarged and are now provided with 650 beds. It is a condition of his offer that administration of the funds should provide for harmonious cooperation between the university and the hospitals.

The basis of Lord Nuffield's proposal is that the university, offering an environment more favorable to research than a big training hospital, should widen the scope of its medical school and of the Nuffield Institute for Medical Research for the purpose indicated. This would involve the establishment of senior posts not subject to the distractions of private practice, under whose direction there would be a body of salaried clinical assistants and house officers selected for their aptitude for research. The university would establish clinical departments of medicine, surgery, obstetrics and gynecology as well as of such other departments as may from time to time seem desirable. Each department would be under the control of a full time university professor, for whose payment the scheme provides.

#### The Physician as a Teacher

In an address to the students of Guy's Hospital, Lord Dawson said that nothing was widening the physician's horizon more than the development of preventive medicine. Physicians no longer looked after a cloistered class of sick people withdrawn from the community. Today they were more concerned with the children in the schools and the workers in the factories. More and more the physician would come to have a teaching function. Teaching how to keep well would come within his province, and the medical and teaching professions were likely to come closer and closer together. The physician could not aid those who wished to lead healthy lives unless there were suitable surroundings in which to work. It would fall to the physicians of the future to take a larger part in the life of the community and in the policy that concerned its health and vigor. Our present piecemeal social policy had no coherent purpose and was too much shaped by expediency. There was not behind it the study of scientific law and biologic facts on which alone

the health of the people could be founded. Falling death rates were matters for congratulation only so far as they denoted the preservation of people healthy enough to enjoy life and effective enough to be sound workers and sound players. Aside from this the benefits were doubtful.

## PARIS

(From Our Regular Correspondent)

Oct. 20, 1936.

### Nephrosis and Nephritis

At recent meetings of the Société médicale des hôpitaux a number of cases were reported which reflect the views of prominent internists here on nephrosis and nephritis. At the June 12 meeting, Pasteur Vallery-Radot and his associates reported a case of "lipoid nephrosis," which had been followed for four years. During the first two years, the clinical picture was that of a pure lipoid nephrosis, but even during this period of observation the presence of red blood cells in the urinary sediment had obliged the authors to alter the diagnosis so as to read "nephritis with superadded humoral syndrome of lipoid nephrosis." The subsequent evolution of the symptoms and signs confirmed this diagnosis. The lipoid nephrosis syndrome receded and the nephritis with uremic symptoms and hypertension replaced the original clinical picture of a lipoid nephrosis until the fatal termination of the case. At necropsy only the histologic changes of an ordinary chronic nephritis were to be found; hence the case was interpreted as a "nephritis with humoral syndrome of a lipoid nephrosis." The authors maintained that the case shows the lack of justification in making a distinction between a lipoid nephrosis and a nephritis. In the discussion, Cathala took exception to this opinion. He believed that a lipoid nephrosis existed as a clinical entity both in adults and in children. He cited the case of a woman, aged 28, who had an anasarca with marked albuminuria but no red cells in the urine. The blood examination was also characteristic of a lipoid nephrosis. There had been two similar transitory attacks, one at the age of 2 and the other at 18. Cathala was of the opinion that a lipoid nephrosis constitutes a special clinical entity that must be considered apart from the usual forms of nephritis. In closing the discussion, Pasteur Vallery-Radot maintained that lipoid nephrosis is rare and that it is necessary to follow a case for a prolonged period before one can say positively that no involvement of the kidney exists. If this should be done, it would soon become evident that the case was one of nephritis with a special syndrome.

A second paper on subacute nephritis due to acute lead poisoning was also read by Pasteur Vallery-Radot and his associates. The patient was a woman, aged 21, who was admitted to the hospital on account of severe abdominal pain. She gave the history of having taken 30 Gm. of a lead preparation as an abortifacient. After a primary phase, of which the principal features were vomiting, abdominal pain and stomatitis, the symptoms of a hepatonephritis appeared. The urine contained albumin and red cells. There was also a marked oliguria and high blood urea. The hepatic involvement was characterized by a subicterus and the presence of urobilin and bile salts in the urine. Sixteen months later the examination showed that a chronic nephritis was in process of development.

Cases of nephritis due to acute lead poisoning are comparatively rare. The majority of the patients die of an acute nephritis; hence one has seldom the opportunity of observing a case developing into a chronic nephritis.

### Lipoid Nephrosis Following Gold Salt Treatment

At the June 19 meeting of the Société médicale des hôpitaux the case was reported of a woman, aged 27, to whom two series of injections of gold salts had been given for a severe progressive rheumatism. The symptoms having been greatly relieved

by the first series in which 3 Gm. was given, a second series containing about the same amount was employed. About six weeks later the syndrome of a lipoid nephrosis appeared and ended fatally.

### Bone Graft to Increase Diameter of Contracted Pelvis

In the Paris letter, June 6, reference was made to a paper by Delagénère of Le Mans reporting eight cases of contracted pelvis, which were enlarged by bone grafts taken from the patients' tibias. In his paper read at the March 17 meeting of the Académie de chirurgie, Delagénère reported a case in which a normal delivery had followed sixteen months after the bone graft operation. At the July 8 meeting of the same society, Delagénère reported a second case in which he had enlarged the anteroposterior diameter of a contracted pelvis by a bone graft in June 1934 and a normal delivery had taken place in May 1936. Roentgenograms of seven of the nine cases were shown at the July 8 meeting. In three cases, dating back two years eight months, two years ten months and four years, the graft is still visible between the ends of the pubic bones.

The history of the case reported at the July 8 meeting was as follows: A primipara, aged 22, entered the clinic June 1, 1934. Several attempts to deliver the presenting head at the inlet by forceps being unsuccessful, a symphysiotomy was done, followed by delivery of a normal child weighing 5,000 Gm. Twelve days later, two grafts 6 cm. long were taken from the patient's left tibia and placed between the separated pubic bones. The patient reentered the clinic to be confined again. Radiography revealed that the separation between the pubic bones had been well maintained since the operation in June 1934. The fetus was as large as the first one, but delivery occurred spontaneously in five hours without incident.

## BERLIN

(From Our Regular Correspondent)

Sept. 28, 1936.

### Close Roentgen Irradiation as Substitute for Radium Therapy

In the treatment of cancer, radium therapy has heretofore been regarded as superior to roentgen irradiation. This superiority has been particularly well demonstrated in cancers of the skin, lips, oral cavity and female genitalia. In such cases the results of roentgenotherapy were unimpressive, virtually nil. Hence centers for anticancer activities came to be established at which deposits of radium could be procured. But the supply has still been insufficient, owing to the high cost of radioactive substances. Professor Chaoul of the Sauerbruch clinic, Berlin, discussing this topic in the Berlin Medical Society, furnished the following statistics on the varying radium supply in different countries, computed for each million of population: Sweden, 1.8 Gm. of radium; Great Britain, 1.7 Gm.; Denmark, 1.8 Gm.; Czechoslovakia, 1.6 Gm.; France, 1.2 Gm.; United States, 1 Gm.; Germany, 0.3 Gm. The Swedish radiologist Forsell places the national radium supply necessary for the proper treatment of cancer at 2.5 Gm. per million of population. As the foregoing figures show, no such requisite amount has been available in any country and least of all in Germany.

In view of this situation, Chaoul undertook to experiment with so-called close roentgen irradiation and found that the hitherto assumed superiority of radium lay not in the quality of the rays but merely in the physical-technical circumstances of their application. He then attempted a carefully supervised adaptation of the circumstances of radium therapy to the administration of roentgen rays. Especially important in both therapeutic procedures was the pronounced diversity of the geometric distribution of the dosage in the tissue. In radium therapy the loss of energy in the tissue takes place quickly according to the depth and the lateral aspect. Extremely

powerful doses can therefore be delivered at the focus without any serious damage to the surrounding tissues. This is shown biologically by the preservation of the parent tissue and of the defense mechanisms necessary for the curative process. (In high voltage therapy, on the other hand, the objective is a thorough homogeneous irradiation of tissue layers and the healthy may be injured in the process.) Roentgen irradiation had therefore, like radium therapy, to be based on a decrease in dosage. It was possible to effect this adaptation by considerable shortening of the focus-skin distance, by application of proportionately soft rays and by the greatest possible restriction of the field of irradiation to the diseased area. In addition, the adaptation of both the time element and the duration of the effects of irradiation are taken into account. The biologic importance of prolonged radioactivity has in recent years been determined for radium by Régaud. In close roentgen irradiation, scattered doses were accordingly administered over a period of from three to four weeks. The assimilation of the maximal dosage too is successful; in radium therapy doses of some 8,000 roentgens are regarded as destructive of cancer and applied accordingly. In close roentgen irradiation by the restricting of the irradiated area and the scattering and extension of the dosage over several days, dosage of from 8,000 to 10,000 roentgens could be, according to Chaoul's reports, smoothly administered without any irreparable damage.

Thus, if all these requirements are satisfied, roentgen irradiation may be largely substituted for radium therapy. During the past four and one-half years 281 cancer patients were administered the roentgen treatment, the sphere of indication being the same; namely, directly accessible tumors. Chaoul outlined the successful results obtained by him: skin carcinoma cases, 93 per cent cured; cancers of the lip, 83 per cent cured; cancer in the oral cavity, 40 per cent, results in no way inferior to those obtained by radium therapy. Chaoul has also observed notable cures in cases of melanoma.

Encouraged by the foregoing satisfactory use of close roentgen irradiation in directly accessible cancer of all kinds, Chaoul is now attempting to apply the same procedure to cancer of the internal organs and thus to render surgical intervention unnecessary. Close irradiation is particularly suitable in rectal carcinoma because of the easy operative accessibility. The procedure is as follows: The coccyx and the under part of the sacrum were resected after the establishment of a preternatural anus, the rectum was drawn down posteriorly and dissected in its longitudinal aspect at the level of the tumor, and its walls were attached to the skin wound with several sutures. Irradiation succeeds then just as in superficially situated cancers; it is continued till complete atrophy of the tumor has taken place (a check should be made by repeated biopsies); then resection and so on takes place. To date this treatment has been given in only nine cases of rectal carcinoma. In seven the tumor completely disappeared, the first case has meanwhile been under observation for two and one-fourth years and the second for one and three-fourths years without any recurrence being noted. These cases are especially noteworthy if one recalls that the average expectation of life in cases of inoperable carcinoma of the rectum is one year. These results also serve to disprove the idea that carcinomas of the rectum are refractive to the rays.

Chaoul's next task will be so to improve the technic that it may be applied to those deep seated tumors for which a combined surgical and roentgen therapy is indispensable.

#### The Value of Determination of Blood Type

The National Health Council functioned as an expert advisory adjunct of the National Bureau of Health till 1933. In this capacity it instituted a subcommittee to investigate the forensic value of blood type determination and in 1929 this committee issued the following statement: "According to medicolegal

expert opinion, blood type determination when skillfully conducted is a reliable forensic aid, particularly in cases involving study of blood stains and the determination of paternity. In many such cases a decision may be arrived at by determination of the blood type when all other evidence is inadequate. Without this procedure the establishment of the facts of a case and the exculpation of a person unjustly accused of wrong-doing would in many instances be impossible." The German courts have subsequently adjudicated all cases concerning support of children and disputed legitimacy of children in accordance with this expert opinion.

But recently the minister of justice has communicated the opinion of a medicolegal expert which casts doubt on the reliability of blood type determination. This opinion sets forth that many aspects of the question call for a certain caution. As long as so much about blood typing remains obscure, a blood type finding cannot be regarded as conclusive evidence but only as indicative of probability. The minister forthwith made public a new authoritative pronouncement on the foregoing opinion by the National Bureau of Health, the contents of which are substantially as follow: The medicolegal expert is of the opinion that the determination of a blood type serves as a valuable index of probability but is inadequate as a sole means of proof in criminal procedures. This view differs from that of serologists and forensic physicians who are actually working in the field of blood typing research. Whenever he refers to so-called variant cases he has in mind that which he has long considered old and unreliable raw material. Tests of the heredity of families the members of which are completely in sympathy with the purpose of the examination and desire such examination reveal no variation (cases of illegitimacy are virtually automatically excluded from this group). In cases that present alteration of the blood group type or deviations from the generally accepted laws of heredity it has been frequently demonstrated that either the test is faulty or the children are illegitimate. Throughout innumerable legal cases the determination of blood group quality A and B and of the blood corpuscle characteristics M and N are frequently mentioned as the sole means of proof. There is no occasion, therefore, for qualification of the foregoing opinion of the National Bureau of Health. It is presumed, to be sure, that the examination will be undertaken on the basis of complete factual data.

#### Substitutes for Gold in Dental Fillings

It is reported from a convention of "dentisten" (the dental practitioners who lack regular training), held at Frankfort-on-the-Main, that an important economic question confronts the group; namely, how the relatively large amount of gold that heretofore has been utilized in the manufacture of artificial teeth and which even today appears to be in part indispensable can be replaced by some other material. Normally, that is, in times when the gold supply did not figure so largely as it does today, the German dental physicians (zahnärzte) and the dentisten required an annual average amount of 5,000 Kg. of gold in the course of their practice of dentistry. It has been possible to decrease this required amount by some 45 per cent and the effort is now being made to effect even further reductions. In their search for a substitute material, in view of the diminishing gold supply, the dental practitioners have turned to platinum-base alloys. At the convention, discussions were submitted on silver-palladium alloys and other new metals, some of which contain gold in varied amounts. The tendency to utilize these and other white metal alloys for crowns, cast fillings and prosthetic pieces has been evident for the last two years and should partially solve the problem of a satisfactory substitut for gold. Those who advocate white metal alloy as a dental replacement material—and that means the entire group of dentisten—doggedly insist that the new metal should by no means be considered a "gold substitute" but as a new working

medium the manufacture and use of which renders gold unnecessary for many procedures of dentistry and in this way, they say, the amount of gold saved can be utilized for more urgent economic ends.

## ITALY

(From Our Regular Correspondent)

Sept. 30, 1936.

### Hemorrhagic Allergy

Prof. Giuseppe Sanarelli of Rome University, also a senator, in a lecture delivered to the physicians of the army spoke on hemorrhagic allergy, also called Sanarelli-Schwartzman's phenomenon. The speaker reviewed the difficulties in the attempts to reproduce experimentally typhoid, cholera, dysentery and intestinal anthrax. These diseases are intestinal reactions to a general infection (which is due to the entrance of specific bacteria into the blood through Waldeyer's pharyngeal lymphatic ring) rather than intestinal local infections. The phenomenon of hemorrhagic allergy was observed by the speaker, for the first time, during his studies on experimental cholera, during which he isolated accidental bacteria, especially colon bacilli, from the blood of cholera guinea-pigs. With a picture similar to that of acute cholera in human beings, death takes place in guinea-pigs which are first injected with a sublethal dose of cholera vibrio and second with a small harmless dose of a culture of colon bacilli. At necropsy epithelialia of the intestinal mucosa (Sanarelli's phenomenon) is found in all cases. The speaker thinks that acute appendicitis is caused by a phenomenon equal to cholera epithelialia. Owing to a condition of either chronic or subacute inflammation, the appendix acquires a condition of sensitization to the bacteria. If the latter, for some reason, enters the blood, acute appendicitis develops. The speaker succeeded in reproducing experimental acute appendicitis in rabbits by this pathogenic mechanism. He includes acute appendicitis within the chapter of hemorrhagic allergy. Schwartzman observed that Sanarelli's immunitary reaction takes place also in the skin (Schwartzman's phenomenon). More recently the reaction has been reproduced almost in all organs, with the exception of the liver, the central nervous system and the adrenals. Hemorrhagic allergy differs from anaphylaxis. Anaphylactic sensitization takes a long time to be produced and the reaction is induced by inoculation of specific bacteria, identical to the antigen that was used in sensitizing the organism. Allergic sensitization is produced in a few hours and the reaction takes place by injection of filtrates of different bacteria than the one used in producing sensitization. The speaker stated that the sudden acute crises of several diseases, such as colic pain, pneumonia and hemorrhagic pancreatitis, can be interpreted as phenomena analogous to those seen in experimental hemorrhagic allergy.

### Castellani Lectures on Italian-Ethiopian War

Prof. Aldo Castellani, head of the Clinic of Tropical Diseases at Rome University, a senator and general adviser on sanitation in eastern Africa, in a lecture recently delivered to the Istituto della Sanità Pubblica, spoke on health and sanitation of the Italian army during the Ethiopian war. There were 500,000 Italian soldiers and 100,000 Italian workers. The army mobilized 135 camp and base hospitals (with a bacteriologic laboratory and a roentgen equipment for each base hospital), fifty-five ambulatory brigades of sanitation, thirteen surgical units, fifteen ambulances for roentgen work, eleven odonto-iatric ambulances, four central laboratories, twelve brigades for disinfection, six brigades for sanitation of the soil, 139 equipments for making water potable and an abundant supply of sanitary material. The army had twenty hospitals and infirmaries along the coast and eight hospital ships, six of which had conditioned air and refrigeration centers. There were also thirty colonist hospitals. The sanitary personnel

comprised about 2,500 physicians (the majority of whom had taken courses at the Clinic of Tropical Diseases at Rome), 385 nurses of the Red Cross, 200 religious sisters and about 16,000 sanitarians and assistant workers. Diseases, especially tropical, among Italians were as follows: 1,241 cases with twenty-three fatalities from pernicious malaria, 453 hospital cases of dysentery (with a predominance of amebic dysentery) with one fatality, seventeen cases of recurrent fever with no fatalities, five cases of dengue with no fatalities and one case of smallpox, which ended in recovery. No cases of exanthematic typhus, scurvy, smallpox, leprosy, plague or cholera developed among the Italians. All soldiers were given lemon juice every other day (one lemon each). Prevention against malarial larvae could not be made. Soldiers in all ranks were daily given three tablets of quinine. In the Italian colonies of Somaliland and Eritrea, 458 cases of typhoid-paratyphoid with 161 fatalities were reported. From experience in colonial wars in the past it was expected to have a larger number, of about 50,000 Italians, taken ill and also to have a death rate of several thousand from diseases. The satisfactory services of sanitation and the hygienic and other measures taken and the administration of vaccines, especially polybacterial vaccines, resulted in the satisfactory health conditions of the troops all through the war. There were thirty cases of sunstroke, with seven deaths. The small number of cases of sunstroke, regardless of the fact that the activities took place in the torrid zone, were due to precautions taken with the troops. Drinking of alcohol was prohibited, except by the daily allowance of wine given to the soldiers at evening. All soldiers wore comfortable helmets, and transportation whenever possible was made by motor. There were many cases of dengue among civilians at Massaua when the Italian troops landed. To prevent contagion by mosquito bites the camps were placed on the highlands. Mortality of soldiers in eastern Africa was lower than that of the metropolitan army.

### Deaths

Prof. Ottorino Rossi, head of the Pavia University, director of the clinic of mental and nervous diseases in Pavia and author of several books on neuropsychiatrics, is dead.

Prof. Arcangelo Ilvento, vice director of public health, is dead. During his life he had important positions in the Italian Red Cross and the social association of public welfare. Recently he was appointed inspector of sanitation. He was a collaborator in sanitation of eastern Africa and an active worker in the prevention and crusade against malaria and trachoma. He made the basis and laws of the insurance societies against tuberculosis. He wrote several books on bacteriology, epidemiology, sanitation, social medicine, hygiene for children in schools, social aspects of tuberculosis and history of knowledge on malaria. Several of his books have been translated into other languages.

## Marriages

JAMES CLIFFORD SCOTT JR. to Miss Mary Helena Devereux, both of West Chester, Pa., September 11.

VINCENT O. LESH, South Amboy, N. J., to Dr. RUTH J. ELLIS of Fayetteville, Ark., September 4.

LLEWELLYN HALL to Mrs. Caroline Doane Fogg, both of West Hartford, Conn., September 11.

THOMAS GEORGE KNOWLTON to Miss Grace E. Kent, both of Toronto, Ont., Canada, August 22.

RICHARD STERLING HERRING, Richmond, Va., to Miss Marie Hurd of Chicago, September 2.

ARTHUR T. LEGG, Boston, to Miss Marie L. Robinson of Brookline, Mass., August 27.

JESSE POLK LOCKHART to Miss Margaret Caldwell, both of Pharr, Texas, September 10.

ALBERT G. SCHUTTE, Milwaukee, to Miss Ada Bernice Hopkins, July 18.

## Deaths

**Isaac Max Rubinow**, Cincinnati; University of the City of New York Medical Department, 1898; executive secretary of the social insurance committee of the American Medical Association, 1916-1917; examiner for the U. S. Civil Service Commission, 1903-1904; economic expert for the Bureau of Statistics, U. S. Department of Agriculture, 1904-1907; member of the Bureau of Statistics, U. S. Department of Commerce and Labor, 1907-1908; member of the Bureau of Labor, 1908-1911; chief statistician for the Ocean Accident and Guarantee Corporation, 1911-1916; in 1917 director of the Bureau of Social Statistics, Department of Public Charities, New York; past president of the Pennsylvania State Conference on Social Work; formerly director of the Zionist Organization of America; directed the establishment of several hospitals in Palestine, 1919-1923; for several years director of the Jewish Welfare Society of Philadelphia; had been engaged in social and editorial work; aged 61; died, September 1, in the Montefiore Hospital, New York.

**Henry Farnum Stoll** ♂ Hartford, Conn.; Columbia University College of Physicians and Surgeons, New York, 1902; past president of the Hartford County Medical Society; governor and fellow of the American College of Physicians; served during the World War; on the staffs of Wildwood Sanatorium, Hartford, Windham Community Hospital, Willimantic, Manchester (Conn.) Memorial Hospital, New Britain (Conn.) General Hospital and the Bristol (Conn.) Hospital; aged 58; died, September 28, of coronary thrombosis.

**Cyrus O. Jaster**, Elyria, Ohio; Western Reserve University Medical Department, Cleveland, 1898; member of the Ohio State Medical Association; past president and for many years secretary of the Lorain County Medical Society; at various times on the staffs of the Elyria Memorial Hospital, Cleveland State Hospital and St. Alexis Hospital, Cleveland; aged 59; died, September 6, in St. Vincent Charity Hospital, Cleveland, of coronary sclerosis and pulmonary infarction.

**Philip C. W. Johannes**, Chicago; Northwestern University Medical School, Chicago, 1900; clinical assistant in genito-urinary surgery at his alma mater, 1904-1906; member of the Illinois State Medical Society; served during the World War; member of the staffs of the Illinois Masonic Hospital and the Evangelical Hospital of Chicago; aged 60; died, September 8, in St. Margaret's Hospital, Hammond, of injuries received in an automobile collision.

**Helen Correll-Loewenstein**, New York; Woman's Medical College of the New York Infirmary for Women and Children, New York, 1898; for many years on the staff of the New York Orthopedic Dispensary and Hospital; aged 72; died, September 7, at her summer home in Bernardville, N. J., of arteriosclerosis, diabetes mellitus and cerebral hemorrhage.

**Robert Stirton Thornton**, Vancouver, B. C., Canada; University of Edinburgh Faculty of Medicine, Scotland, 1884; formerly chairman of the school board of Deloraine, Manit., and member of the legislature of Manitoba; at one time minister of education and president of the Medical Council of Canada; aged 73; died, September 18, of coronary thrombosis.

**Benjamin Augustus Littell**, Opelousas, La.; Tulane University of Louisiana Medical Department, New Orleans, 1888; formerly secretary of St. Landry Parish Medical Society; at various times mayor, parish coroner and health officer of Opelousas; past president of the city and the parish boards of health; aged 70; died, September 4.

**Gordon Lee Hastings** ♂ Little Rock, Ark.; Medical College of Virginia, Richmond, 1926; fellow of the American College of Physicians; assistant state health officer and director of rural sanitation, state department of health; formerly health officer of Union County; aged 38; died suddenly, September 14, in Emporia, Va., of heart disease.

**John Davidson Hunter**, Rayne, La.; Memphis (Tenn.) Hospital Medical College, 1902; member of the Louisiana State Medical Society; formerly member of the state legislature and mayor; parish health officer; aged 60; died, September 16, in the Touro Infirmary, New Orleans, of cerebral hemorrhage.

**Guy Howard Swan** ♂ Beachwood, N. J.; Michigan College of Medicine and Surgery, Detroit, 1903; member of the Radiological Society of North America; served during the World War; member of the staff of the Paul Kimball Hospital, Lake-wood; aged 55; died, September 8, of coronary occlusion.

**Franklin Trumbull Wilcox** ♂ La Porte, Ind.; Rush Medical College, Chicago, 1890; formerly secretary of the county

board of health and member of the city board of health; past president of the La Porte County Tuberculosis Association; aged 70; died, September 13, of coronary occlusion.

**De Witt Kluttz**, Washington, N. C.; University of Pennsylvania Department of Medicine, Philadelphia, 1918; member of the Medical Society of the State of North Carolina; for many years a member of the staff of the Tayloe Hospital; aged 47; died, September 8, of coronary thrombosis.

**Charles Stanley Grahame Jr.**, Summitville, Ind.; Indiana University School of Medicine, Indianapolis, 1933; aged 29; died, September 23, in a hospital at Hazard, Ky., of injuries received when a motorcycle on which he was riding collided with an automobile.

**John Alton Gillen** ♂ Rice Lake, Wis.; University of Minnesota Medical School, Minneapolis, 1934; on the staff of the Lakeside Methodist Hospital; aged 32; died, September 1, in St. Francis Hospital, Evanston, of cirrhosis of the liver and cerebral edema.

**Clarence Light Carlton** ♂ Moline, Ill.; Northwestern University Medical School, Chicago, 1903; served during the World War; on the staffs of the Lutheran Hospital and the Moline Public Hospital; aged 65; died, September 9, of carcinoma of the colon.

**Samuel Thomas Tapscott**, Searcy, Ark.; University Medical College of Kansas City, Mo., 1907; member of the Arkansas Medical Society; served during the World War; aged 51; was found dead in his office, September 4, of a self-inflicted bullet wound.

**Albert Smith**, Parsons, Kan.; Chicago Homeopathic Medical College, 1895; member of the Kansas Medical Society; for many years a druggist; formerly on the staff of the Mercy Hospital; aged 66; died, September 13, of chronic nephritis.

**James Archibald Edwards** ♂ Oakdale, Iowa; University of Nebraska College of Medicine, Omaha, 1904; superintendent of the Iowa State Sanatorium; aged 61; died, October 5, as the result of injuries received in an automobile accident.

**John Herbert McConnell**, Toronto, Ont., Canada; Trinity Medical College, Toronto, 1897; fellow of the American College of Surgeons; surgeon to the Grace Hospital; aged 60; died, September 15, of coronary thrombosis.

**Frederick Erastus Hyde**, New York; Bellevue Hospital Medical College, New York, 1874; member of the Medical Society of the State of New York; Civil War veteran; aged 92; died, September 16, of chronic nephritis.

**James Edgar Murray** ♂ Piqua, Ohio; Atlanta (Ga.) Medical College, 1893; past president of the Miami County Medical Society; on the staff of the Memorial Hospital; aged 78; died, September 5, of cerebral hemorrhage.

**Hester Brewer Smith**, Dallas, Texas; University of Texas School of Medicine, Galveston, 1915; served during the World War; aged 46; was found dead, September 1, of a self-inflicted bullet wound.

**Archibald Adams Reid**, Oneonta, N. Y.; Long Island College Hospital, Brooklyn, 1883; aged 77; died, September 13, in a hospital at Utica, of diabetes mellitus and bronchopneumonia.

**Harold McClellan Allen**, Toronto, Ont., Canada; McGill University Faculty of Medicine, Montreal, Que., 1922; L.R.C.P., London, and M.R.C.S., England, 1924; aged 40; died, August 3.

**Edward Benjamin Taylor**, Milwaukee; Hahnemann Medical College and Hospital, Chicago, 1897; aged 62; died, September 1, in Rochester, Wis., of coronary sclerosis and angina pectoris.

**De Ruyter Howland** ♂ Stratford, Conn.; Columbia University College of Physicians and Surgeons, New York, 1906; health officer of Stratford; aged 54; died, September 12.

**William Gray Swank**, Crawfordsville, Ind.; Beaumont Hospital Medical College, St. Louis, 1892; formerly city health officer; aged 76; died, September 4, of heart disease.

**David Montefiore Foss**, Gouverneur, N. Y.; University of Vermont College of Medicine, Burlington, 1886; aged 76; died, September 8, of myocarditis.

**Martin Andrew O'Neill**, Baltimore; University of Maryland School of Medicine, Baltimore, 1900; aged 61; died, September 9, of chronic nephritis.

**Edward E. Whitehorne**, Vesper, Wis.; Albany (N. Y.) Medical College, 1878; aged 80; died, September 16, of arteriosclerosis.

## Correspondence

### WATER, WATER, EVERYWHERE

To the Editor:—A few years ago I appealed to you as the fountainhead of information to know whether or not to give all my patients lots of physics. You did not reply but published my letter and I promptly received many replies from all over the country. Again my head is in a whirl. I find I am living in the center of the therapeutic Sahara Desert of the world. All our patients are dehydrated, desiccated and destined to destruction. They are drying up. Water, water everywhere and every one short on water. It's a sad predicament. I find it a bit difficult to determine just how nearly my patients are about to blow away, but this difficulty does not seem to be shared by many others. A hospital patient who has not had an intravenous injection of fluid the first three hours after getting well settled down between his rubber sheets has probably just neglected to engage a physician. A hospital record that does not include forced water is always laid aside for special discussion, inquiry and, probably, criticism. There is now a movement on to make it routine to hydrate all patients and then make the diagnosis, just as a friend of mine does who immediately injects solution of posterior pituitary and then determines whether or not the woman is in labor. Once in about five it saves time. As the aquatic squad approaches a ward, the patients yell "Here come the Marines."

These hydration specialists have lots of backing. You can't read anything in medicine or the lay press without being informed that you should "push water." It's about the only remedy medicine offers that all the cultists have whole-heartedly accepted; so there must be a lot to it. Every time a country newspaper adds a new medical columnist, the town waterworks has to drill extra wells. Every time the schools adopt a new and up-to-date physiology they have to add one or two fountains and some other plumbing. Some schools tried "water drinking drills" like fire drills but had to give them up because of shortage in facilities, and now we do not know and may never know whether it is safe to allow school children to face the future without these drinking drills. From my own children I learned that each child should become water conscious and react to the sight of a fountain very much as a dog does to a tree, except in reverse. They should start the day with two big glasses before breakfast and then a milk cereal. These wash out all the poisons and toxins that congregate in a child's body through the night. It seems that the child can work off the poisons that develop through the day fairly well, but the night poisons, they are something different. It takes lots of water. My younger child is a perfect convert and a great believer in school textbooks. She thought once she could hear the water chasing the poisons round about in her innerds and begged me to listen, but all I heard was bubbles. When I did not enthuse over her water program she suggested that I might be behind times, as all of her teachers had advised them many times always to drink all the water they can hold.

Every one knows that in case of a cold one should fairly swim in water. Since no one ever heard a fish sneeze, how can it be otherwise? Drinking lots of water for colds (with soda, apples or limes) always did look logical to me, for when your eyes, nose and lungs are spouting out pints of liquids it shows you are short on water or something. Besides, it seems reasonable to assume that if the water pouring out of these openings doesn't wash out the cold where it is, more water will start spoutings elsewhere and wash it out where it isn't. Plenty of water in at the top and lots of physic from the bottom will often flush out a cold before it decides where to locate, fairly catching it in midair and totally off its guard. I'll admit that I have worried a bit about the effect to gravity on a very

wet cold as compared to a dry one, and it hasn't always been clear to me how soaking up a cold till it drips will prevent it from extending itself rather aimlessly about *ad lib* and *cum laude*.

Empirically but with a fanfare of superscience, all diseases are rapidly realining themselves into two great groups, the washable and the unwashable. In the early days of this movement only a few were in the first group and it was easier to name them and regard the unnamed as belonging to the unwashable class; but we have made so much Progress that now it is far easier to name the latter and regard all others as candidates for the great flood. The definitely unwashable consist of alopecia, freckles, atheroma callus, chloasma, blackheads, dyshidrosis, dandruff and housemaid's knee. There are others but not many and you will note that they are surface diseases, just where you might think a good washing would help. Now to be fair I must add that the very wildest irrigating enthusiasts do not maintain that their universal placebo will be harmful in these cases. They merely feel that it is not definitely indicated, and after you have talked with one of them for a few minutes you will concede that that is some concession.

A friend related to me that one of the most comical sights he ever witnessed was once when he was driving through the hills of Connecticut and came to a filling station. While the regular attendant was filling his car, the attendant for the Colon Flushing Department with full equipment was chasing a half drobed and screaming woman among the outhouses and through the garden. Even after he had sold her on the idea, she still didn't know that that was where her colon was located. Such experiences practically killed the lay monopoly of this life-saving procedure and returned it to our brother disciples where it belongs, if it belongs.

Now we wash out and away the last vestige of most diseases at every natural opening of the body and if there are difficulties we punch new openings. We wash out pyelitis, even when it consists largely of cortical abscesses, and baptize nephritis regardless of conditions with the same assurance with which a colored preacher douses his converts. We add quarts of water to the diet of a patient with cystitis though it dilutes his medicine and causes extra painful voidings, to wash out what? If we know no physiology there is no thought more logical than the idea that drinking excessive amounts of water will prevent constipation. We saturate a tuberculous patient who seems disposed to dry up on our hands, for what reason? Specialists in tuberculosis claim that a dry lung is a therapeutic ideal. We force water on squishy babies whether they are dehydrated or not, and for what reason? Not that some of them do not need it but do they all, especially the squishy kind? We ask dried-up old people to increase their water intake, and who ever heard of an old person in health drinking much water? That may be one reason why they are old. We pump in large quantities, or at least we used to, in cases of threatened or actual eclampsia to wash out the "toxins" that no one can find and now learn that too much water is the cause. A patient has a traumatic head. There is not much we can do about it, so why not fill his skin and cavities with lots of water and increase his intracranial pressure? In case of doubt, give big intravenous injections. Next to blood transfusions they create the most certain impression the physician knows what to do and does it *pronto*. Never fail to take the relatives into consideration. We get a case of fits, just any kind or age, and decide instantly that everything is going out and nothing coming in, so we decide that something should go in in a big way—water—sometimes with salt, other times with sugar and other times with both and let them fight it out and let the best chemical win. Since Hippocrates we have known that during convulsions the brains are "wet" but maybe it was the wrong kind of moisture. Something has to be done. Last week a street car conductor complained that his work required that he stay with his car and

that he did not get to drink enough for his health. I suggested a job as attendant at Boulder Dam. We prepared our prosthetics who have been damming up water in every niche of the body for months by putting them to bed, draining and forcing water for two to six weeks—that is, those do who do it that way. Maybe some have changed. Reversed hydrostatics have about ruined their renal apparatus, so these patients are asked to give nature's method, physiologic rest, reversed action and enforced maximum activity. They claim that the draining releases some of the toxins but that the washing really does the big trick. Seems as sensible as vinegar for sore eyes, but custom and usage demand the procedure. One surgeon is said to have claimed that he didn't regard his patient as adequately prepared if a spray of water did not issue from his incision.

Even I admit that there are many instances when replacing lost or strayed fluids is highly indicated, but I have about arrived at the conclusion that there are a few other instances where the procedure is "the bunk" and I have definitely decided that thirst is a fair guide for water needs for one whose mind is clear and whose gullet is open.

E. O. HARROLD, M.D., Marion, Ind.

## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

### KETOGENIC DIET IN PETIT MAL

*To the Editor:*—I wish to ask some advice of you. I have a daughter who is 18 years old. There were no birth injuries and no other trouble except mild ileocolitis the first year. She had lobar pneumonia at 2 years, possibly with encephalitis complicating. Appendectomy was performed at 5 years. At the time of this operation her mother noticed that she turned her eyes upward and thought it just a habit. The mother told me about the eye trouble and I at once felt that she was having petit mal. This condition grew worse, until at 7 years of age she was having the spells of turning the eyes upward every two or three minutes, the attack lasting a few seconds each time. I was advised that it probably was a brain tumor. A neurologic surgeon attempted to inject air into the ventricles with no success but caused a spastic paralysis on the left side. I later put her on the ketogenic diet. That practically controlled the attacks, but she had a nutritional edema, and I discontinued the diet. I have had her seen by at least six different neurologists and neurologic surgeons, and nothing seems to be of any benefit. Also she has been through the mill of the allergist without results. At the present time these spells are harder than in the beginning, the eyes turning up and the upper part of the body nodding a little. If she is carrying a dish with something in it, she may spill something out of it but not drop the dish. At times the spells are long enough so that she may lose connection in the conversation. Early in the morning at times she may have one every three or four minutes, but as the day passes it may be half an hour between spells. When she is at her best she may not have more than one every half hour early in the morning and less frequently as the day goes on. She has had at least one general convulsion. After all these efforts it must apparently be admitted that the condition is epilepsy, possibly caused by an encephalitis at the time of the pneumonia. She did average work in school except in mathematics, in which she did poorly. She was graduated from high school last spring. In subjects like history and English she often made A and B. She is a lovable child except for being at times somewhat moody and obstinate, but on the whole she is very likable. She is beginning to see that she has a hard time maintaining her place with people and is beginning to get resentful and to seclude herself somewhat. She has an unusual amount of energy and is resentful for not being able to do more and better than any one else. She can be sent to college, but what kind, and where is there something that she can do so that she can be protected and do something of benefit to her? I should like to be advised and if you can refer me to some one capable of taking up the subject and helping me I shall appreciate it. Of course, keep in mind, in considering the case, her locality and not advise me to consider something too far away. Please omit name.

M.D., Kentucky.

**ANSWER.**—The opinion expressed regarding the nature of the attacks and the underlying cause is probably correct. There is a possibility that the attacks may yield to the administration of stramonium. The powdered leaf may be given as a test in a dose of 0.12 or 0.2 Gm. three times daily, over a period of

three or four days. If improvement is not apparent by that time, some other form of treatment should be tried. Such attacks often do not yield to phenobarbital and another trial with the ketogenic diet is worth considering. When this diet was introduced, nutritional disorders were encountered. To prevent these, yeast should be added to the diet and 1 Gm. of calcium phosphate given each night. Needless to say, the urine should be tested daily to make certain that a state of ketosis actually exists.

It is well to encourage the kind of work that leads to a normal physical, mental and social development of the patient. The patient's own wishes as to the kind of work selected should, of course, be considered, which makes it difficult to give more specific advice.

### NEPHRALGIA

*To the Editor:*—A white woman, aged 36, has a severe bilateral nephralgia extending over a period of the past six years. At the time she came under my care in June 1935, she had been getting one-half grain (0.03 Gm.) of morphine daily for three or four months. Intravenous and retrograde pyelograms show definite bilateral kinking, but no obstruction at all as evidenced by the fact that there is no dilatation at all above the kink. She is now getting the same relief from one-eighth grain (0.008 Gm.) of morphine as she formerly had from one-half grain. There is no pus or albumin in the urine, and phenolsulphonphthalein is eliminated about 80 per cent in two hours (intramuscular). General nutrition is excellent. In October she was operated on, the left kidney being freed from fat and delivered from the wound; the muscle was sutured together beneath the kidney, which was left immediately subcutaneous. Partial relief has followed on this side. Thinking that the pain might be in the nature of a neuralgia and that temporary interruption of the pain pathway might result in relief, I injected 75 mg. of procaine hydrochloride intraspinally. She had complete relief for seventy-two hours and seemed to be in Heaven, but then her pain returned as before. I am wondering whether there is any way in which the pain pathways can be interrupted, by section or injection, or if you have any other suggestions to offer. Please omit name.

M.D., Michigan.

**ANSWER.**—For a woman, aged 36, suffering with bilateral nephralgia, a limited experience apparently justifies a sympathetomy of the renal vessels and ureter on both sides. Mr. S. Harry Harris of Lewisham, Sydney, Australia, appears to be quite enthusiastic about such a procedure. It is possible that a subdiaphragmatic splanchnic nerve section with removal of the upper two lumbar ganglions may be more effective than the renal sympathectomy, since the latter operative procedure would include a sympathetic denervation of the entire urinary system rather than being limited to the kidney itself.

It would be unwise to attempt any radical procedure without the preliminary study of a nerve block. Successful splanchnic nerve blocks should be employed as therapeutic tests previous to any type of sympathectomy.

The continued use of morphine naturally arouses the suspicion of morphine addiction, for if there is an addiction the pain may not be of organic character, and therefore all operative procedures would fail.

### TOXIC ERYTHEMA

*To the Editor:*—I have a case of erythema multiforme that is very resistant to treatment and I should like you to make some suggestions as to treatment.

W. G. ELLIOTT, M.D., Cuthbert, Ga.

**ANSWER.**—Erythema multiforme belongs to the group of toxic erythemas. Some authorities include many of them under the title erythema multiforme. Others insist that only those of unknown etiology presenting the typical acute lesions on the hands and feet and mucous membranes are admissible as erythema multiforme. From the statement in the query that the case is resistant to treatment, a doubt is raised at once that the case is one of the typical ones, for they usually subside spontaneously in a few weeks. There are several rare dermatoses to be considered under the heading of chronic erythema multiforme, but without a description of the case in question no intelligent surmise of its place in this group can be made. See Ormsby, Diseases of the Skin, Philadelphia, Lea & Febiger, 1934, pages 137 and 138. Granuloma annulare and erythema elevatum diutinum might also be considered.

If the case belongs to the group of toxic erythemas, every effort should be made to determine its etiology. The first possibility to be investigated is that some drug is responsible. Phenolphthalein, arsenphenamine, antipyrine, inorganic arsenic, mercury, potassium iodide or antistreptococcal serum may be suspected. Foods, as fish, shellfish or cheese, are sometimes responsible. The relation of erythema multiforme to purpura would accentuate this possibility. Infections, especially streptococcal infections in the teeth or the tonsils, the puerperal

uterus, malaria, gonorrhea and many other diseases not to be considered in relation to the present case are able to cause a toxic dermatitis. Syphilis rarely causes such an eruption. Bloch reported two cases of an erythema multiforme-like eruption in cases of ringworm in which trichophytin injections had been given. Tachau (*Handbuch der Haut- und Geschlechtskrankheiten* 6:616) does not admit such toxic erythemas as erythema multiforme. He limits the term to typical acute cases presenting concentrically evolving eruptions on the hands and feet, and bullous eruption of the oral mucosa, self limited but recurring from time to time. He believes that these are due to some specific cause, probably an infection yet undiscovered.

For treatment of such cases, salicylates take the first place; calcium salts are helpful. Tachau quotes W. S. Lain (*X-Rays in Erythema Multiforme*, *THE JOURNAL*, May 1, 1909, p. 1405), who used small doses of x-rays on two days in succession, and another on the fifth day of treatment, after which the lesions subsided. A recurrence thirteen days later was given similar dosage on three successive days and again subsided. The backs of the hands are quite susceptible to x-rays and six doses within three weeks would necessarily be small, probably about one-eighth skin unit (37 roentgens). This is worth trying, if investigation does not alter the diagnosis.

#### NARCOLEPSY

*To the Editor:*—Will you advise me concerning the possible causes of persistent recurring sleepiness occurring in a man of 55, a lawyer, in excellent physical condition except for a chronic sinusitis of thirty years' duration, which is probably due to an allergic sensitivity if one may judge from the large number of eosinophils in the nasal secretion and 8 per cent in the blood stream. No other organic ailments are demonstrable. The sleepiness comes on when he reaches the office in the morning or shortly after and is relieved by getting up and walking outside but again recurs. Outdoor exercise, such as golfing, relieves for several hours. He sleeps well at night and feels refreshed in the morning. This has been of some five years' duration but is gradually getting worse and interferes seriously with his work, especially when in court. I will appreciate greatly any help you can give me. If this is published, please omit name and address.

M.D., Oregon.

*ANSWER:*—The patient is most probably suffering from narcolepsy, as the attacks of somnolence appear to be truly pathologic. The inquirer does not state whether he has any attacks of weakness when he has any emotional upset, such as becoming angry, or from surprise, which occasionally occur in persons with such attacks of somnolence. He may be placed on ephedrine sulfate, 0.024 Gm. (three-eighths grain), two or three times a day, as this preparation should relieve him materially. Benzadrine sulfate has also been recommended for the treatment of narcolepsy. This preparation comes in tablets of 10 mg. each and may be given to adults in doses of two or three tablets three times a day after meals, provided there are no contraindications, such as hypertension.

#### INCIDENCE OF MULTIPLE BIRTHS

*To the Editor:*—Kindly quote the frequency of birth of twins (of the same and the opposite sex), triplets (of the same and the opposite sex) and quadruplets (are there any of the opposite sex or are they always girls?). Is there any record of five and only five fetuses? The Canadian, the Italian and the African were all six fetuses. Kindly give this your immediate attention.

M.D., Pennsylvania.

*ANSWER:*—A frequently repeated rule concerning the incidence of twins, triplets and quadruplets is Hellen's formula, according to which twins occur once in 80 single births, triplets once in 80<sup>2</sup> births or 1 in 6,400, and quadruplets once in 80<sup>3</sup> births or 1 in 512,000. Das (*J. Obst. & Gynec. Brit. Emp.* 41:227 [April] 1934) analyzed statistics concerning 186,842,231 births and found that twins occurred once in every ninety births, the highest proportion occurring in Russia and Denmark (one in seventy-one) and the lowest in Japan (one in 301). However, hospital statistics of fifteen countries showed that twins occurred once in every seventy-nine labors. Twins were more frequently born among the colored population not only in the United States but also in India.

In a series of 803 pairs of twins studied by Orel (*Arch. f. Gynäk.* 129:719, 1927) 547 were of the same sex and 256 were of the opposite sex, giving a ratio of 68.1:31.9 per cent. This author found that single ovum twins occurred in between 23 and 26.6 per cent of all cases of twins and that boys occurred with almost equal frequency in single and double ovum twins. In a study of 717,907 twins, Nichols (*Mem. Am. Anthropol. A.* 1, 1907) found that both children were males in 234,497, both were females in 219,312 and they were of opposite sex in 264,098.

Triplets may be of single, double or triple ova and they may all be of the same sex or there may be two of one sex and one of the opposite sex.

According to Hellen, quadruplets occur once in 512,000 births, but according to Gruelich (*Am. Naturalist* 64:142, 1930), who analyzed 120,061,398 pregnancies, quadruplets occurred once in 727,159 deliveries. Quadruplets may be monozygotic, dizygotic, trizygotic or quadrazygotic. They may be all male, all female or of both sexes. Pryor (*Am. J. Anatomy* 59:409 [Sept. 15] 1936) was able to find only five sets of quadruplets in the United States that have reached the age of 2 years or more.

About thirty cases of quintuplets have been reported. The incidence of this occurrence has been estimated as one in 41,600,000 pregnancies. Dr. Dafoe, who attended the Dionne quintuplets, reported the case in *THE JOURNAL*, Sept. 1, 1934, p. 673, and he made no mention of a sixth fetus. According to De Lee there is only one authentic case of sextuplets.

#### LEUKOPLAKIA BUCCALIS

*To the Editor:*—A man, aged 27, single, noticed six months ago some white smooth milky patches at the tip on the dorsal surface of the tongue, to which he had not given any importance. Three days ago he noticed that these white areas have spread to the middle third of the tongue. Irregular white smooth areas alternating with coarsely infiltrated areas were found on the upper surface of the tongue from the middle third to the tip. On the margins of the organ, cracks and deep rhagades could be plainly seen; on squeezing, no exudation was elicited. On instrumental manipulation, pain is not felt. The blood Wassermann test is negative; the patient has not enough money to pay further diagnostic expenses such as for a spinal fluid Wassermann test. Taste sensitiveness is normal. Tobacco (smoking and chewing) and the liquor habit are not indulged in. There is no evidence of a chancre that may suggest syphilis. I am inclined to diagnosis this case as leukoplakia buccalis despite the emphatic assurance of the patient that he does not use tobacco or liquor. Your opinion with regard to diagnosis and suggestion as to treatment will be deeply appreciated. Please omit name.

M.D., California.

*ANSWER:*—This case is most probably one of leukoplakia buccalis associated with a scrotal tongue. While a certain number of these cases are associated with syphilis and heavy smoking, it is possible for these to be absent in some cases. Poor hygiene of the mouth, carious teeth, and ingestion of highly seasoned, spiced and hot foods may be contributory factors and should be ruled out. Other conditions that must be considered are lichen planus, which may be limited to the buccal mucosa, but, as a rule, the characteristic angular, violaceous, itching papules are usually present on the flexor aspects of the wrist and about the ankles, with associated lesions on the body. The buccal and tongue lesions usually appear as smooth or fissured plaques, with a tendency to occur in rings having linear striae and covered by a silver white pellicle.

Monilial infection of the tongue must also be considered. In this condition there are usually white, scroll-like patterns, and the area is covered by a shiny, gelatinous, translucent membrane. Microscopically, monilial or other yeastlike organisms are found.

Leukoplakia buccalis is best treated by care to the hygiene of the mouth and teeth, the use of antiseptic mouth washes, and the destruction of any thickened or ulcerated areas by electrocoagulation, radium or carbon dioxide snow.

Lichen planus calls for systemic treatment with mercurials or arsenic by mouth or, preferably, by injection.

Monilial infections are best treated by a saturated solution of gentian violet and the use of a sodium perborate mouth wash.

#### STERILIZING DIAPERS

*To the Editor:*—Will you please give me a formula for a chlorine solution for sterilizing diapers? Please give directions for use. Kindly omit name.

M.D., Michigan.

*ANSWER:*—A chlorine solution for sterilizing diapers is not generally recommended. The chlorine salts are rather strong chemicals, and not only might they be injurious to the fabric of the diaper but they might also irritate the baby's skin if the chlorine solution has not all been removed from the cloth. It has been the practice in bleaching cloth when calcium hypochlorite is used to neutralize with sodium bisulfite after the bleaching process, in order to avoid injury to the material of the cloth.

The simplest and most efficacious method of sterilizing diapers is to wash them well in soap suds, rinse out the suds in clear water and then boil the diapers. After the diapers are dried, preferably in the sun, they may be pressed with a hot iron. In cases of "ammoniacal diapers" it has been recommended that in addition to the routine laundering the diapers

be soaked in a solution of boric acid (two heaping tablespoonfuls of boric acid powder to a quart of water). The diapers are not rinsed after soaking in the boric acid solution but wrung out and dried. Traces of boric acid left in the diaper neutralize ammonia and also retard the growth of bacteria that produce the ammonia.

#### ATROPHIC ARTHRITIS

*To the Editor:*—A man, aged 40, had the usual childhood diseases. In 1920 he had a tonsillectomy but a moderate sized tag was left in. In 1921 he was given 1,500 units of tetanus antitoxin for a trivial puncture wound. There was no reaction from the serum. Four years ago he contracted a mild pharyngeal diphtheria for which he was given 10,000 units of diphtheria antitoxin intramuscularly. One week after this he developed a severe serum reaction. There was an intense urticaria lasting for three days. The itching was so intense that it necessitated almost constant bathing with alkalis. Epinephrine gave transient relief. There was swelling of the lips and eyelids and apparently some edema of the glottis, as evidenced by hoarseness and slight difficulty in breathing. Joint symptoms were severe. The urticaria and edema gradually disappeared, but the pain and stiffness in the joints persisted. This was especially noted in the knees when walking was first attempted. The joint symptoms have spread so that there has been involvement of all the joints. There is moderate crepitation on motion in the wrists and in one ankle. The patient has a chronic arthritis of the atrophic type. At the time of the serum reaction the patient had two devitalized but not abscessed teeth; they had been roentgenographed a short time before. He also had the small tag of tonsil previously mentioned. He is of the asthenic type, 71½ inches (182 cm.) in height and weighing about 140 pounds (63 Kg.) at the time of the serum reaction. He was otherwise in good physical condition. At the present time the arthritis seems to be progressing and the joint symptoms are more severe. Foci of infection have been removed but no other therapy has been instituted save for analgesics for pain. Is chronic arthritis a very uncommon occurrence following severe serum sickness? What is the relationship between the serum reaction and the chronic arthritis? Would the patient have been likely to develop an arthritis if he had not had this severe serum reaction? Would you treat this condition any differently than any other case of chronic atrophic arthritis? Please omit name. M.D., North Dakota.

*ANSWER.*—Serum disease is a definite clinical entity and as represented in this case the injection of tetanus antitoxin provoked the formation of antibodies in the tissues. The second injection of antigen in the diphtheria antitoxin reacted with the preformed antibody resulting in anaphylactic shock.

The inquirer does not mention the presence in the patient of other symptoms of atrophic arthritis beyond pain and stiffness of the joints nor does he indicate the time interval between the anaphylactic reaction and the onset of active joint disturbance, such as swelling or discoloration. Joint pains have been known to persist for quite some time following serum sickness, although serum disease per se is not generally regarded as a cause of atrophic arthritis. What probably happened in this case is that the patient was already "marked" for arthritis and the serum reaction served merely as a precipitating cause. In almost all cases of atrophic arthritis it is possible to discover a precipitating cause, which involves some unusual drain on the patient's resistance and serves to transfer the patient from the prearthritic state into the arthritic state. Among the more common precipitating causes are respiratory infections, surgical operations, childbirth, severe nervous shock and gastro-intestinal upsets.

The treatment of this patient should include the usual measures of recognized benefit in atrophic arthritis. Since calcium is believed to be beneficial in anaphylactic conditions, it might be advisable to give this drug a trial.

#### DYSCHONDROPLASIA

*To the Editor:*—Would you please give me whatever information you may have available regarding dyschondroplasia or multiple congenital enchondrosis? I know of such a case in a man, aged 24, involving the left forearm and left lower leg. There is a shortening of the left ulna, and bony exostoses in the left ulna, left scapula and left tibia. The condition has been present since birth. Incidentally, the father and sister of this man suffer from the same condition. Could you give me any opinion as to the prognosis and any possible type of treatment? If this query is published, please omit name. M.D., Wisconsin.

*ANSWER.*—Dyschondroplasia, with or without exostoses, was so well described by Ollier in 1898 that it has been called by his name. There is no known etiologic factor but its hereditary tendencies have long been recognized. The growth changes are attributed to defects in the primary germ cell and have no relation to any postnatal complications. Only bones that are preformed in cartilage are affected.

Exostoses that cause disturbances of locomotion or function should be removed and deformities may be corrected by osteotomy, but there is no specific treatment that is known at the present time.

#### EXCESSIVE HIRSUTY IN WOMEN

*To the Editor:*—A woman, aged 24, single, complains of growth of hair on the face and the chest, male distribution on the abdomen, and moderate growth on the arms and thighs, present since childhood. The menses set in at the age of 13, occur every twenty-eight days, and last four or five days. The pulse is 84, the blood pressure 110 systolic and 70 diastolic, the height 5 feet 3 inches (160 cm.), the weight 108 pounds (49 Kg.), the hemoglobin 65 per cent. The thyroid is slightly enlarged; the extremities are warm. The breasts are well developed and firm. On the ground that the anterior pituitary extract is supposed to produce hair growth in certain alopecias, is it logical to assume that the anterior pituitary body is hyperfunctioning in this case and that the use of an antagonistic gland will produce a disappearance of the excessive growth of hair? What gland is antagonistic to the anterior pituitary? The patient has had occasional right frontal headache during the morning hours, worse in damp weather, for five years. Tonsillectomy was performed five years ago for frequent sore throat. General bodily weakness and a postnasal drip have existed since an attack of sinusitis four years ago. Could an adrenal gland tumor be the causative agent? Is thyroid indicated? No pelvic examination was attempted, since the organs are presumed normal on the basis of normal menses and breast development. Please omit name. M.D., New Jersey.

*ANSWER.*—Excessive hirsuties in the female may be due to a variety of causes, any one of which or a combination of all may be operative. These may be summed up as follows:

1. An overactive pituitary, particularly the anterior lobe.
2. An adrenal disturbance involving the cortex, usually of the tumor type.
3. A deficiency of ovarian hormones, or certain types of ovarian tumor.
4. An overactive thyroid.

The possible causes will have to be analyzed to determine the basis for the condition.

The question as to which gland is antagonistic to the pituitary is difficult to answer, for the anterior pituitary contains apparently a large number of special hormonal agents, each one of which would have its own antagonist. The whole situation is one that is exceedingly complicated and it actually involves an investigation into the entire endocrine balance.

The unilateral frontal headaches would suggest a pituitary disturbance; the rapid pulse, with an enlarged thyroid, would suggest hyperthyroidism.

A pelvic examination ought to be made if possible to determine the presence or not of an ovarian tumor; an examination of the adrenals should be made for the same purpose. A roentgenogram of the head showing the pituitary fossa and a basal metabolic test should be made.

Nothing has been said about lineae atrophicae, either purple, pink or white, which occasionally appear on the thighs, abdomen or shoulders in these cases; if these are present it would indicate an anterior lobe deficiency allied to the Cushing syndrome.

#### QUARTZ FRAGMENT IN LENS CAPSULE

*To the Editor:*—For the past six months a miner has been carrying a piece of quartz, a 1 mm. cube, on the anterior lens capsule of the eye. The symptoms are unilateral diplopia, central "shadow" effect, and prism "rainbow" in bright light. On examination the eye presents no evidence of irritation. There is a small leukoma at the limbus where the foreign body entered and the quartz is clearly visible in the midpupillary zone on the anterior lens capsule, dropping slightly on changing the position of the head but fixed to the lens capsule. As I am unable to find authority in the literature available to me, I should like the following information: 1. If left alone, what is the prognosis? 2. If properly removed now, could one expect an opaque scar in the anterior lens capsule or possibly precipitate a traumatic cataract formation? 3. Is it safer to wait until signs of irritation develop (if any) and only then remove the foreign body? 4. If the quartz should drop off the lens capsule into the anterior chamber in the future, might it scarify the endothelium or even Descemet's membrane sufficiently to impair vision? 5. Kindly cite authority on subject. GEORGE S. WEISS, M.D., Winnemucca, Nev.

*ANSWER.*—1. If the condition is left alone, it is probable that a complete traumatic cataract will ultimately develop. The reason is that the piece of quartz must be embedded in the anterior lens capsule; otherwise it could not remain in the described position. Consequently there must be a solution of continuity of the capsule. With such a condition there will be a gradual seepage of aqueous into the lens through the capsule rupture and eventual cataract formation (Weiss, O.: Physiology of Nutrition of Eye, Kurzes Handbuch der Ophthalmologie, vol. 11). A few cases have been reported of foreign bodies entering the lens through a minute tear in the capsule, which closed immediately afterward without formation of cataract (Elschnig and others, 1910).

2. Both.

3. It is not probable that there will be any signs of irritation in that eye. As long as the quartz remains in situ and does

not come in contact with the uvea, no inflammation is to be expected. Consequently, removal of the foreign body may be postponed indefinitely.

4. Probably not.

5. There seems to be no record of intra-ocular quartz foreign bodies in the literature and only an occasional reference to foreign bodies that have remained adherent to the anterior lens capsule without penetration. The statements that are made regarding intra-ocular pieces of glass undoubtedly hold true for intra-ocular quartz. For references, see Wagenmann: *Injuries* (Graefe-Saemisch Handbuch der gesamten Augenheilkunde, edition 2, pp. 1395 and 1399) and Cramer, E.: *Injuries* (Kurzes Handbuch der Ophthalmologie, volume IV).

#### MR. ALBERT PAYSON TERHUNE AND THE PHYSIOLOGY OF FEAR

*To the Editor:*—Will you please inform me whether the following statement by Albert Payson Terhune, which appeared in the *Reader's Digest*, is true: "Do not allow fear to master you when you are in the presence of an ill-tempered or vigilant dog. My reason for stressing this may sound fantastic, yet it is an established scientific fact. When you are frightened, nature pumps an undue amount of adrenalin through your system. This throws off an odor said to be like that of formic acid, which human nostrils fail to detect. Dogs, however, hate it. It rouses some of them to contempt. Many an otherwise inoffensive dog will attack when that odor reaches him." A. J. REICH, M.D., New York.

*ANSWER:*—Mr. Terhune's advice not to let fear master you is sound, whether you face a dog or any other potential danger, but the reasons given for expression of fear as a factor of safety are, if not fantastic, at least not based on known or proved facts. Intense fear may, indeed, cause some increased secretion of epinephrine. Even this is in dispute. But there is no evidence that increased epinephrine leads to exhalations from the body, exhalations inducing "hate" and "contempt" in the canine species. We know, for a fact, that many hundred times the normal output of epinephrine may be injected intravenously in dogs, and man, in the presence of dogs, with the latter showing no "hate" or "contempt" detectable by man. If and when an otherwise innocuous dog attacks a man in a state of fear, it is probably due to the man's action rather than to his odors. To be sure, a person in great fear may lose control of his sphincters, but the ordinary human nose is not immune to the odors thus released; these odors are not like formic acid, and science knows of no evidence that they induce hate and contempt in pups.

#### ACIDIFICATION OF URINE

*To the Editor:*—Recently I have been having difficulty with my patients following transurethral prostatectomy. In spite of the fact that there is no residual urine, the urine remains persistently alkaline, and there is a large amount of triple phosphate and calcium phosphate crystals in the urine. Patients also complain of a great deal of terminal burning and some frequency. The patients experiencing this trouble are mostly from a district where the water is very hard and contains alkali. I have used acid sodium phosphate, ammonium nitrate and ammonium chloride in an attempt to acidify the urine, without success. I would appreciate any suggestion that you could offer for relief of this condition. Kindly omit the name. M.D., South Dakota.

*ANSWER:*—In all cases in which acidification of the urine is aimed at, an acid-forming diet should be resorted to even prior to or jointly with medication. Such diet includes all animal foods, excepting milk, and all cereals, while fruits and vegetables must be excluded. In resistant cases the ketogenic diet should be resorted to, giving, for example, water flavored with tea and saccharin for two days and adding to this 350 cc. of whipped cream on each of the following three days.

#### PILONIDAL CYST

*To the Editor:*—A man, aged 28, has had a pilonidal cyst since 1931. He has had two radical operations, but the sinus has recurred each time and the patient has not improved following the operations. He has consulted some of the best men in the country, who have suggested that the sinus may connect with the spinal canal through the sacral foramina and account for the persistence of the sinus. If it does connect with the spinal canal, what mode of treatment would you suggest? If there is any literature on this subject, kindly give me references. Please omit name. M.D., South Dakota.

*ANSWER:*—Probably a portion of the cyst still remains. In order to make sure of its extent, the sinus may be injected with thorium dioxide sol 20 per cent. After the injection roentgenograms should be made in both the anteroposterior and lateral positions. This will in all probability outline the exact extent and locality of the cyst.

Only occasionally does the cyst extend into the spinal canal. When this occurs, the cyst must be removed in order to effect a perfect cure. It probably does not come within the subarachnoid spaces.

#### EFFECTS OF LONG CONTINUED USE OF BARBITURATES

*To the Editor:*—Mrs. B. G. J., aged 58, has for several years had hypertensive cardiovascular renal disease. When I first saw her about one year ago I prescribed pentobarbital sodium capsules 1½ grains (0.1 Gm.) three times a day for relief of pain. Since that time she has continued to take them, consuming on the average six capsules a day. Aside from the mere habit formation, will you please outline for me the deleterious effects from such a rate of consumption of this drug. Also, what would you suggest that I prescribe to take the place of it? Please omit name. M.D., Texas.

*ANSWER:*—A search of the literature fails to reveal reports of deleterious effects from such habitual consumption of pentobarbital sodium, though this may be ascribed to the rather recent introduction of the drug than to lack of possibility of their occurrence. Acetylsalicylic acid is an excellent analgesic, acting in a different manner from that of pentobarbital sodium and with well known untoward effects that may be watched for. The gradual substitution of this for the other drug by combining the two in the same capsule may solve the problem.

#### HEMIATROPHY OF BODY

*To the Editor:*—I have a patient on whom no laboratory work has been done and I am at a loss as to where to begin. A girl, aged 4½ years, apparently normal in all other respects, has for the past year had an arrested development on the same side, from the shoulder girdle to the hand and from the gluteal region to the foot. The hand and foot are much smaller than those of the opposite side and the muscles of the fleshier parts much wasted. Can you help diagnose this case? Please omit name and address. M.D., Iowa.

*ANSWER:*—The patient is affected by a condition known as hemiatrophy of the body. At best it is difficult to determine the etiology of this disorder. As a rule it is congenital in origin, though one should not fail to make careful neurologic examination. In some instances hemiatrophies may be traced to a birth injury with a resulting infantile palsy, though in the absence of paralysis, spasticity, other neurologic changes and a carefully obtained history, focal cerebral lesions may be excluded.

#### DEPRESSIVE PSYCHOSES OF MANIC-DEPRESSIVE TYPE

*To the Editor:*—Is there any evidence that you know of to show the sexual etiology of the depressive psychoses of the manic-depressive type? Are there any statistics to show that these depressions occur in eunuchs or in women who may have had their ovaries removed in early life? Any data or references you may be able to offer on this particular topic will be greatly appreciated. Kindly omit my name. M.D., New York.

*ANSWER:*—Depressive psychoses of the manic-depressive type are prone to develop in persons who are constitutionally predisposed to them, under conditions of stress of various kinds. They occur not uncommonly at puberty and the climacteric, particularly the latter, whether it occurs spontaneously or is induced artificially. There is no evidence that eunuchs are particularly prone to them. This, however, does not establish a sexual etiology. The stresses of exhaustion, bodily illness, pregnancy and lactation may also precipitate attacks of depression, and the same is true of emotional stress in reaction to situations in the outside world.

#### PNEUMONIA FOLLOWING INJECTION OF SERUM

*To the Editor:*—A man in excellent health punctured his foot on a nail at 8 o'clock in the morning. Two hours after this he received an injection of antitetanic serum and developed, the next day, lobar pneumonia followed by pleural effusion. Is there any connection between the injection of serum he received and the lung reaction he developed? Please omit name. M.D., Canada.

*ANSWER:*—No.

#### "OPHTHALMOSCOPIC SIGNS OF DEATH"

*To the Editor:*—I should like to comment on your reply to Dr. Wyatt Barnes's inquiry about the ophthalmoscopic signs of death (*THE JOURNAL*, October 24, p. 1408) in which you state that "the interrupted blood column makes its appearance only in the veins." I have seen the blood column interrupted in the arteries at the time of death, and my own experience is corroborated by C. H. Usher (*Ophth. Rev.* 15: 339, 1896). As a matter of fact, the article quoted as your reference (*American Encyclopedia of Ophthalmology* 5: 3784) reads "These interruptions . . . are apparent chiefly in the veins."

GORDON M. BRUCE, M.D., New York.

## Medical Examinations and Licensure

### COMING EXAMINATIONS

#### STATE AND TERRITORIAL BOARDS

ALABAMA: Montgomery, June 29-July 1. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

ALASKA: Juneau, March 2. Sec., Dr. W. W. Council, Juneau.

ARIZONA: Phoenix, Jan. 5-6. Sec., Dr. J. H. Patterson, 826 Security Bldg., Phoenix.

CALIFORNIA: *Reciprocity*. Los Angeles, Dec. 16. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

COLORADO: Denver, Jan. 5. Sec., Dr. Harvey W. Snyder, 422 State Office Bldg., Denver.

CONNECTICUT: *Basic Science*. New Haven, Feb. 13. *Prerequisite to license examination*. Address State Board of Healing Arts, 1895 Yale Station, New Haven.

DELAWARE: Dover, July 13-15. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, Dover.

DISTRICT OF COLUMBIA: Washington, Jan. 11-12. Sec., Commission on Licensure, Dr. George C. Ruhland, 203 District Bldg., Washington.

IDAHO: Boise, April 6. Commissioner of Law Enforcement, Hon. Emmitt Pfost, 205 State House, Boise.

ILLINOIS: Chicago, Jan. 26-28. Superintendent of Registration, Department of Registration and Education, Mr. Homer J. Byrd, Springfield.

IOWA: *Medical*. Des Moines, Dec. 1-3. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines. *Basic Science*. Des Moines, Jan. 12. Sec., Prof. Edward A. Benbrook, Iowa State College, Ames.

KANSAS: Topeka, Dec. 8-9. Sec., Board of Medical Registration and Examination, Dr. C. H. Ewing, 609 Broadway, Larned.

KENTUCKY: Louisville, Dec. 2-4. Sec., State Board of Health, Dr. A. T. McCormack, 532 W. Main St., Louisville.

LOUISIANA: New Orleans, December. Sec., Dr. Roy B. Harrison, 1507 Hibernia Bank Bldg., New Orleans.

MARYLAND: *Regular*. Baltimore, Dec. 8. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. *Homeopathic*. Baltimore, Dec. 8-9. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MICHIGAN: Ann Arbor and Detroit, June 9-11. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 202-3-4 Hollister Bldg., Lansing.

MINNESOTA: *Basic Science*. Minneapolis, Jan. 5-6. Sec., Dr. J. C. ... .. and Hall, University of Minnesota, Minneapolis. Jan. 19-21. Sec., Dr. Julian F. Du Bois, 35 ... ..

MONTANA: Helena, April 6. Sec., Dr. S. A. Cooney, 7 W. 6th Ave., Helena.

NEW HAMPSHIRE: Concord, March 11-12. Sec., Board of Registration in Medicine, Dr. Charles Duncan, State House, Concord.

NEW MEXICO: Santa Fe, April 12-13. Sec., Dr. Le Grand Ward, Box 693, Santa Fe.

NEW YORK: Albany, Buffalo, New York and Syracuse, Jan. 25-28. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, 315 Education Bldg., Albany.

NORTH CAROLINA: *Endorsement*. Raleigh, Nov. 30. Sec., Dr. Ben J. Lawrence, 503 Professional Bldg., Raleigh.

NORTH DAKOTA: Grand Forks, Jan. 5-8. Sec., Dr. G. M. Williamson, 4½ S. 3rd St., Grand Forks.

OHIO: Columbus, Dec. 2-4. Sec., State Medical Board, Dr. H. M. Platter, 21 W. Broad St., Columbus.

OKLAHOMA: Oklahoma City, Dec. 9. Sec., Dr. James D. Osborn, Jr., Frederick.

OREGON: Portland, Jan. 5-7. Sec., Dr. Joseph F. Wood, 509 Selling Bldg., Portland.

PENNSYLVANIA: Philadelphia, January. Sec., Board of Medical Education and Licensure, Mr. James A. Newpher, Education Bldg., Harrisburg.

PUERTO RICO: San Juan, March 2. Sec., Dr. O. Costa Mandry, Box 536, San Juan.

RHODE ISLAND: Providence, Jan. 7-8. Chief, Division of Examiners, Mr. Robert D. Wholey, 366 State Office Bldg., Providence.

SOUTH DAKOTA: Pierre, Jan. 19-20. Dir., Division of Medical Licensure, Dr. B. A. Dyar, Pierre.

VERMONT: Burlington, Feb. 10-12. Sec., Board of Medical Registration, Dr. W. Scott Nay, Underhill.

VIRGINIA: Richmond, Dec. 9-13. Sec., Dr. J. W. Preston, 28½ Franklin Road, Roanoke.

WEST VIRGINIA: Charleston, March 1. Sec., Public Health Council, Dr. Arthur E. McClue, State Capitol, Charleston.

WISCONSIN: *Basic Science*. Milwaukee, Dec. 19. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee. *Medical*. Madison, Jan. 12-14. Sec., Dr. Henry J. Gramling, 2203 S. Layton Blvd., Milwaukee.

WYOMING: Cheyenne, Feb. 1. Sec., Dr. G. M. Anderson, Capitol Bldg., Cheyenne.

#### NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II*. Feb. 9-11, May 10-12, June 21-23, and Sept. 13-15. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

#### SPECIAL BOARDS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written examination for Group B applicants will be held in various cities throughout the country, April 17. Oral examinations for Group A and B applicants will be given in Philadelphia, June 7-8.* Sec., Dr. C. Guy Lane, 416 Marlborough St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written examination will be held simultaneously in different centers of the United States and Canada in December. Practical or clinical examination will be given in St. Louis in April.* Chairman, Dr. Walter L. Biering, 406 Sixth Ave., Des Moines.

AMERICAN BOARD OF OPHTHALMOLOGY: Los Angeles, Jan. 23. *All applications for this examination must be filed before Dec. 1, and case reports must be submitted before Jan. 1.* Sec., Dr. John Green, 3720 Washington Blvd., St. Louis, Mo.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Cleveland, Jan. 9. *Only applications received by the Secretary on Dec. 1 or before will be acted upon by the Board.* Sec., Dr. Fremont A. Chandler, 180 N. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Philadelphia, June 7-8. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: New York, Dec. 29-30. Sec., Dr. Walter Freeman, 1028 Connecticut Ave., Washington, D.C.

AMERICAN BOARD OF RADIOLOGY: Atlantic City, June 4-6. Sec., Dr. Byrl R. Kirklín, Mayo Clinic, Rochester.

AMERICAN BOARD OF UROLOGY: Chicago, Dec. 4-6. Sec., Dr. Gilbert J. Thomas, 1009 Nicollet Ave., Minneapolis.

### Texas June Report

Dr. T. J. Crowe, secretary, Texas State Board of Medical Examiners, reports the written examination held in Austin, June 23-25, 1936. One hundred and eighty-two candidates were examined, 163 of whom passed and 19 failed. One hundred applicants were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
Northwestern University Medical School.....	(1936)*		1
Tulane Univ. of Louisiana School of Medicine (1935), (1936)	(1936)		2
Johns Hopkins University School of Medicine.....	(1928)		1
Harvard University Medical School.....	(1936)		1
Creighton University School of Medicine.....	(1933)		1
University of Nebraska College of Medicine.....	(1936)		1
Columbia Univ. College of Physicians and Surgeons.....	(1933)		1
University of Pennsylvania School of Medicine.....	(1936)		1
Baylor University College of Medicine.....	(1936)		70
University of Texas School of Medicine.....	(1936)		72
Friedrich-Wilhelms-Universität ..... (1927)†			1
Berlin ..... (1927)†			1
Thüringische Landesuniversität Medizinische Fakultät, Jena ..... (1922)†			1
Universität Basel Medizinische Fakultät ..... (1934)†			1
Osteopath.....			9

School	FAILED	Year Grad.	Number Failed
Tulane University of Louisiana School of Medicine.....	(1935)		1
Jefferson Medical College of Philadelphia.....	(1934)		1
Baylor University College of Medicine.....	(1936, 4)		2
University of Texas School of Medicine.....	(1936, 2)		1
Escuela Médico Militar, México, D. F. .... (1922)†			1
Universidad Nacional Facultad de Medicina, México, D. F. .... (1936)†			1
Osteopath.....			8
Nongraduate .....			1

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
University of Arkansas School of Medicine.....	(1933), (1935, 2)		Arkansas
University of California Medical School.....	(1934)		Missouri
Emory University School of Medicine.....	(1931)		Georgia
University of Georgia School of Medicine.....	(1933)		Georgia
Chicago College of Medicine and Surgery.....	(1917)		Illinois
Illinois Medical College.....	(1901)		Iowa
Northwestern University Medical School.....	(1930)		Illinois
(1931) South Dakota			Michigan
Rush Medical College.....	(1926) Illinois, (1931)		Illinois
School of Medicine of the Division of Biological Sciences.....	(1935)		Illinois
University of Illinois Col. of Medicine.....	(1934, 3), (1936, 2)		Indiana
Indiana University School of Medicine.....	(1929)		Kansas
University of Kansas School of Medicine.....	(1933)		Kentucky
University of Louisville Medical Department.....	(1910)		Kentucky
University of Louisville School of Medicine.....	(1935)		Louisiana
Louisiana State University Medical Center.....	(1936)		
Tulane University of Louisiana School of Medicine.....	(1933), (1935)		Alabama, (1929), (1933, 2), (1934, 3), (1935, 2) Louisiana, (1933) Michigan, (1932) Mississippi
Johns Hopkins University School of Medicine.....	(1933), (1935)		Maryland
Harvard University Medical School.....	(1931)		Washington
Tufts College Medical School.....	(1925)		Mass.
University of Michigan Medical School.....	(1929, 2)		Michigan
Marion-Sims College of Medicine, Missouri.....	(1893)		Illinois
St. Louis University School of Medicine.....	(1913), (1932), (1934) Missouri		Kansas
Washington University School of Medicine.....	(1921)		California
(1932) Missouri			Nebraska
Creighton University School of Medicine.....	(1932)		Kentucky
University of Nebraska College of Medicine.....	(1923), (1935)		Ohio
Eclectic Medical College, Ohio.....	(1928)		Ohio
Ohio Medical University.....	(1904)		Ohio
University of Cincinnati College of Medicine.....	(1932)		Oklahoma
University of Oklahoma School of Medicine.....	(1931), (1933)		Illinois
Hahnemann Med. College and Hosp. of Philadelphia.....	(1891)		U. S. Army
Jefferson Medical College of Philadelphia.....	(1915)		U. S. Army
Medico-Chirurgical College of Philadelphia.....	(1916)		N. Carolina
University of Pennsylvania School of Medicine.....	(1918)		Louisiana
Meharry Medical College.....	(1929)		
(1933), (1934), (1935, 2) Tennessee			Arkansas
Memphis Hospital Medical College.....	(1902)		Tennessee
(1909) Mississippi, (1911) Oklahoma			Louisiana
Vanderbilt University School of Medicine.....	(1933)		Virginia
Baylor University College of Medicine.....	(1930) Ohio, (1931)		Penna.
Medical College of Virginia.....	(1931)		New York
University of Toronto Faculty of Medicine.....	(1921)		
University of Western Ontario Medical School.....	(1929)		
Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin ..... (1931)†			New York
Julius-Maximilians-Universität Medizinische Fakultät, Würzburg ..... (1924)†			Colorado

Regia Università degli Studi di Firenze. Facoltà di  
Medicina e Chirurgia.....(1928) New Jersey  
Osteopath<sup>†</sup>.....Iowa, 4, Georgia,  
Missouri, 1, 2, Oregon,  
Pennsylvania:

\* This applicant has received the M.B. degree and will receive the  
M.D. degree on completion of internship.  
† Verification of graduation in process.  
‡ Examined in medicine and surgery.

## Book Notices

**The Thyroid: Surgery—Syndromes—Treatment.** By E. P. Sloan, M.D.  
Edited by Members of the Sloan Clinic, Guy A. Sloan, M.D., et al. And  
with a foreword by Wm. Seaman Bainbridge, M.D. Cloth. Price, \$10.  
Pp. 475, with 99 illustrations. Springfield, Illinois, & Baltimore: Charles  
C. Thomas, 1936.

This work of E. P. Sloan is edited posthumously by the members of his clinic and is divided into twenty chapters. While much of what is stated in discussions on anatomy, physiology and endocrinology are known facts, the question of the etiology of endemic goiter is thoroughly considered. The work of Crotti, of a contagium vivum as the exciting cause of endemic goiter, gives much food for thought. It is pointed out that Crotti's conception is upheld by McCarrison. Iodine insufficiency, mineral imbalance and catalytic agents as possible etiologic factors are scrutinized. The author's hypothesis disagrees with the usually accepted pathogenesis of dysthyroidism. He also offers a classification of the divers types of goiter by dividing its pathology into four main groups, adding a number of subdivisions to each. A survey of preventive measures and the pathology of thyroid disease, as well as symptomatology, diagnosis and prognosis, are ably discussed. The therapeutic aspects of thyroid disease (nonsurgical and surgical) are well handled. In the former the author believes that mineral deficiency as related to thyroid disease is of the "utmost importance" and he recommends the use of sodium phosphate in 20 to 30 grain (1.3 to 2 Gm.) doses three times a day, as advocated by Kocher many years ago. This may be augmented by the use of phosphorus, calcium and sulfur, the last suggested in the form of sulfonated bitumen (ichthammol), with which he has had "unusual success in both toxic and atoxic goiter." On the successes reported by the roentgenologist in the treatment of toxic goiter by means of x-rays, Sloan fails to find "incontrovertible conclusions concerning the efficacy" of such treatment. Twenty per cent of his series of cases were subjected to roentgen treatment previous to coming under his observation; fifty per cent of these patients stated that they were "improved" and, while classed as cured, they have not been "entirely well." The other fifty per cent reported no results from the treatment. An analytic study of the pros and cons of radium treatment is interesting. Commenting on the use of x-rays in intrathoracic goiter, the author says "In this type of goiter harm is done more often than anything else." He recommends its use, however, in malignant disease of the thyroid. Chapter 10 deals with the surgical treatment of thyroid disease. It is an excellent chapter. A comparative study of anesthetics is added. Commenting on basal anesthetics, the author states that the combination of morphine and scopolamine when used in proper dosages produces ideal anesthesia. He adds that "barbital cannot be used with safety for complete anesthesia but for the control of mental states previous to operation." The illustrations and colored plates by William B. McNett are well executed.

While the technical steps of thyroidectomy are standardized perhaps, the author justly remarks that every goiter surgeon has a tendency to develop his technic along certain lines and to introduce little innovations and improvements, but that the author finds that "this [his] fully developed technic is in his hands immeasurably better than any other." The reasons for the various technical steps are carefully discussed and, rather ingeniously, Sloan compares his method of thyroidectomy with obstetric delivery. He speaks of "flexion," "rotation" and "delivery" as pertaining to removal of the thyroid. For completeness of the cycle, the author may as well have compared dividing the prethyroid structures as "rupture of the membranes" and exposure by retraction as "dilation." The complications arising during thyroidectomy and their treatment are

succinctly described. The chapter on postoperative management contains many valuable hints on the avoidance of complications and how to steer the patient through postoperative thyrotoxic crises. The chapter on the parathyroid and thymus glands are no less thorough than are the others. The final two chapters on the history, nomenclature and classification afford much information and interesting reading. The former traces interest in diseases of the thyroid to the pre-Christian era, thence down to the present, and from pioneers to contemporary thyroid surgeons. As especially prominent in thyroid work in America are mentioned Halsted, Rogers, Ochsner, Mayo and Crotti. In speaking of the last named, he calls attention to the fact that Crotti in 1917 published "the first comprehensive treatise on diseases of the thyroid." The effect of this book upon the development of the modern conception and treatment of thyroid disease is hard to evaluate. In this classical treatise he brought together all the worthwhile thought and all the investigations which had been done up to that time and by making this knowledge accessible the appreciation of the importance of the goiter problem was enhanced." A thorough bibliography completes the work. All in all the book is interesting, is well written and contains a vast amount of information.

**Studies on the Aetiology and Pathogenesis of Cataracta zonularis.** By Gunnar von Bahr, Med. Lic., G.B.G. An Academic Treatise Which by Due Permission of the Most Experienced Faculty of Medicine at Uppsala Will be Publicly Defended in the Lecture Room of the Physiological Institution Saturday, May 23rd, 1936, 10 A. M., to Obtain the Degree of Doctor of Medicine. Paper. Pp. 240, with illustrations. Uppsala: Almqvist & Wiksells Boktryckeri-A.-B., 1936.

This is an academic treatise which "by due permission of the most experienced Faculty of Medicine at Uppsala will be publicly defended in the lecture room on May 23, 1936, to obtain the degree of Doctor of Medicine." The author reviews all that is known about cataracta zonularis or capsulolenticularis arida siliquata or perinuclearis from the first description in 1800 to date. This occupies exactly half of the book. The remainder is devoted to the technic and results of rat feeding experiments in the production of congenital zonular cataract. The work is good, and definite conclusions can be drawn that the lenticular opacities result in animals in which experimental rickets is complicated with tetany. The condition apparently causes an injury to the superficial lens fibers with the resultant slow development of the cataract, even though the tetany may disappear. This conclusion is not entirely new, as much of this work has been done previously by others; but von Bahr's work corroborates much of the earlier work and allows of a clear exposition. The bibliography, comprising fourteen pages, is complete. The last four pages are actual photographs of the experimental animals and do not show much. There is nothing revolutionary or excitingly new in all this, but the book does represent careful conscientious work and is praiseworthy. Would that there were more pieces of work of this type emanating from the younger men in this country.

**The Comparative Anatomy of the Nervous System of Vertebrates, Including Man.** By C. U. Ariens Kappers, M.D., Sc.D., LL.D., Director of the Central Institute of Brain Research, Amsterdam, G. Carl Huber, M.D., Sc.D., and Elizabeth Caroline Crosby, Ph.D., Associate Professor of Anatomy in the University of Michigan. Volumes I and II. Cloth. Price, \$16, per set. Pp. 864; 865-1845, with 710 illustrations. New York: Macmillan Company, 1936.

An appraisal of this great work requires first some reference to its authors and its historical setting. Ariens Kappers, a pupil of Edinger and during the past twenty-five years director of the Central Institute of Brain Research at Amsterdam, has devoted his whole life to investigation of the comparative anatomy of the nervous system. This program was broadly conceived, was followed with industry and acumen, and has now reached its natural consummation in a comparative investigation of the human brain from the standpoint of its evolution and racial characteristics. In 1920 and 1921 he published in two massive volumes his *Die vergleichende Anatomie des Nervensystems* (Haarlem, de Erven F. Bohn), which has remained the only comprehensive reference book in this field.

Ten years ago, when Dr. Ariens Kappers wished to reissue this work in English, in his search for a collaborator he naturally turned to Dr. Crosby, whose thorough familiarity with the field and fidelity to high ideals of accuracy and fitness gave

promise of preeminent qualifications for the task. In this he was not disappointed, for she did the work of translation and rewriting to bring the material down to date so acceptably as to win respect and admiration. Here one can speak without qualification, for in a letter to the reviewer Ariëns Kappers writes "The part Dr. Crosby had in this work is by far the greatest. I hope this will be realized wherever this book is used." It is a pleasure to record in this connection that her own university has recently promoted Dr. Crosby to full professorial rank.

During the progress of this work the late Dr. Huber joined the staff and his ripe scholarship, editorial experience and exacting standards of scientific and literary excellence contributed much to the success of this remarkable achievement. The proficiency of the publishers should not pass without comment, for, despite an unexpected combination of difficulties, they have produced an unusually good example of book making.

The product of this collaboration is a serviceable summary of the best research in the field covered, a summary which is greatly needed, for much of this literature is in relatively inaccessible publications and all of it is technical and hard for the human neurologist to assimilate. It is strictly comparative. The human brain is adequately treated from this standpoint; that is, each region is considered in its comparative and phylogenetic relationships. There is no systematic description of it as a whole, for this is available in other manuals. For the same reason there is little reference to the extensive literature on brain weights and measurements, racial differences and other neurologic aspects of physical anthropology, to which Ariëns Kappers himself has recently contributed so extensively. Summaries of these topics are given in his shorter work, *The Evolution of the Nervous System in Invertebrates, Vertebrates and Man* (Haarlem, 1929).

The first chapter, on the evolution and morphology of nervous elements, is more heavily weighted with theory than any other part of the work. The other chapters, however, are not mere compilations of descriptive details, for the authors everywhere look for general relationships and do not hesitate to advance their own theoretical interpretations. Chapter II is devoted to the spinal cord from *Amphioxus* to man (pp. 135-334); chapter III to taste and the general afferent systems of the medulla oblongata (pp. 335-432); chapter IV to the lateral line and acoustic systems (pp. 433-515); chapter V to the efferent systems of the medulla oblongata and midbrain, with illustrations and discussion of Ariëns Kappers' principle of neurobiotaxis (pp. 516-644); chapter VI to the coordinating apparatus of medulla oblongata and midbrain (pp. 645-695), and chapter VII to the cerebellum (pp. 696-864). These seven chapters comprise volume I.

In volume II, chapter VIII embraces the mesencephalon and diencephalon (pp. 865-1239); chapter IX the telencephalon, except neopallium (pp. 1240-1516), and chapter X the development of the cortex in mammals (pp. 1517-1713). The last chapter is of especial interest to students and practitioners of human neurology, for here at the culmination of the evolutionary series are fully illustrated discussions of the evolution of fissural patterns, cortical lamination, and patterns of anatomic and physiologic localization.

The work is well documented, and extraordinary care has been taken to ensure the accuracy of these references. The bibliographies appended to the chapters comprise a total of 272 pages, and these judiciously selected titles include most of the significant literature. The index of 131 pages lists every reference to each author and topic treated. The printing is clean and few misprints have been noted, though there are some lapses, as on page 1660, where the citation of figures 636, 640 and 641 refers to the German text of 1921 and should read figures 709 and 710 of the present text. On page 852 the entry C. J. Herrick, 1895, should be C. L. Herrick, and on page 1280 *Lepidosteus* is referred to as a dipnoan. Figure 423 (fig. 408 of the German text) is based on a crude diagram of the median section of the brain of *Amblystoma* published by Herrick in 1910. It is unfortunate that the errors of this sketch are perpetuated in the revision, for more accurate figures are now available. In the chapter on the cerebellum the fundamental work of Larsell is not adequately recognized, perhaps because his papers on its morphology and development in lower mammals appeared after this text was completed. Larsell's

researches have clarified the morphology of the cerebellum on the basis of more detailed and critical comparative analysis than has heretofore been made.

The blemishes noted are of minor importance in comparison with the general excellence and accuracy of the whole. This is really a new work, not merely a translation and revision of the old. It is indispensable to every serious student of the vertebrate nervous system, for there is no comparable manual in any language, and it will doubtless remain the standard book of reference in this field for many years to come.

*Voprosy entsefalografii v detskom vozraste. S prilozheniem atlasa, risunkov i entsefalogramm. Pod redaktsiei S. A. Reynberga. [Problems of Encephalography in Childhood, with Atlas, Drawings and Encephalogram.] Cloth. Price, 6 rubles. Pp. 107, with 137 illustrations. Leningrad: Ogliz-Blomeditz, Leningradskoe otdelenie, 1936.*

The problems of encephalography are presented in the form of essays emanating from the Leningrad Clara Zetkin Scientific-Experimental Institute of Mother and Child Welfare. Since 1929, 170 children have been subjected to the encephalographic method of study at the institute. In fifteen cases the roentgenologic data were controlled by necropsy. There is a chapter by M. A. Toporkova on the technic of the method and a description of an original head bandage in the form of a loop. In a chapter by D. S. Lindenbraten the reader will find a detailed anatomic study of roentgenologic presentation of the brain and its coverings. The approach to the interpretation of encephalograms in pathologic conditions is based on the study of the normal as gleaned from numerous observations of normal brains of children. Two papers by Lindenbraten and H. H. Keler present a combined roentgenologic and clinical study in the various disorders of the brain and the meninges. They present clinical-roentgenologic syndromes of postmeningitic and post-encephalitic processes, birth trauma, tumors, microcephaly, cerebral hemiplegia, hydrocephalus and a few of the rarer diseases. The authors made encephalographic studies in seventy-three cases of epilepsy. They emphasize the lack of parallelism between the clinical signs and roentgenograms. An atlas of drawings and encephalograms is appended. This collection of essays because of considerable material and careful study should prove of interest to the pediatrician and the roentgenologist.

*Vascular Disorders of the Limbs Described for Practitioners and Students. By Sir Thomas Lewis, C.B.E., F.R.S., M.D., Physician in Charge of Department of Clinical Research, University College Hospital, London. Cloth. Price, \$2. Pp. 111, with 5 illustrations. New York: Macmillan Company, 1936.*

This excellent volume is written by an internationally known authority who has written eight volumes previously, dealing chiefly with circulation. Most of the material is from papers by the author and his associates, previously published in *Heart* and in the first two volumes of *Clinical Science*. The absence of controversial data and of a bibliography greatly lessens the value of the book, which is clearly a presentation of the author's explanations and opinions. He admits frankly in the preface that the book is not a comprehensive account of vascular disorders of the limbs. Since several arterial diseases and diseases of the veins and lymphatics are not considered, the title of the volume is somewhat misleading. The author states in the preface that "the time is opportune to attempt to outline conceptions of certain peripheral disorders of the circulation in a way that may prove useful to those engaged, not in research, but in practice." There is grave doubt that the volume will serve this purpose, since diagnosis and treatment are presented incompletely and inadequately. Almost the entire presentation is that of a clinical physiologist interested in mechanisms rather than in diseases.

The chapters on the circulation in the limb and its testing and on the effects of circulatory arrest are excellent. In the chapter on embolism and thrombosis of the main arteries the origin of emboli in the extremities from arteries, particularly the aorta, is overlooked and the explanation of the marked diminution in circulation following arterial embolism is not convincing. Certainly the effects of embolism on circulation are more profound than those of simple ligation or compression of an artery, and this needs further consideration. In the section on the treatment of arterial embolism, methods of increasing collateral circulation are incompletely presented. The short chapter on "postschismic contracture; intermittent claudication"

appears complete, but the thirteen pages on "arteriosclerosis; thrombo-angiitis obliterans" are deficient in many regards. The chapters on "vasoconstriction; local arterial spasm" and on "spasmodic arterial obstruction; Raynaud's phenomenon" are clearly and concisely written. However, the explanation of the uniformly good results that follow sympathectomy for Raynaud's disease of the lower extremities in contrast to occasional failure of good results to follow sympathectomy for Raynaud's disease of the upper extremities is not convincing. Recent investigative work on this problem is not mentioned. The author believes that Raynaud's disease is a manifestation of local fault in digital arteries and that it is not attributable to overactivity of the sympathetic nervous system. His extremely fair attitude toward sympathectomy for Raynaud's disease is conspicuous, for he writes: "Belief or disbelief in the theory that the malady is due to overaction of the sympathetic should not be allowed to weigh for or against operation. The justification of the treatment is to be founded upon experience and not upon theory." The chapter on "gangrene (bilateral forms; cervical rib; general)" is excellent, but the one on "vasodilatation; flushing" leaves much to be desired. It is quite clear that much remains to be done in this field. The term "erythrocyanosis" is used in place of the commonly used terms "cutis marmorata" or "livedo reticularis" but does not appear to be a better designation. The reader may question the accuracy of the statement that "it came in with short skirts and thin stockings and will go out with them." Objection is given to the term "erythromelalgia," and "erythralgia" is suggested as more appropriate. Since the term "erythralgia" is not even included in a standard medical dictionary and since "erythromelalgia" is an accepted medical term, it seems advisable to retain it. Trial of sympathectomy is recommended for this malady, but no reason is given for this recommendation and no results are mentioned. Sympathectomy appears illogical, since pain in this condition is aggravated by increasing the temperature of the skin, an inevitable result of sympathectomy. The final chapter, on vascular disorders in diseases of the nervous system, is clearly written and contains much valuable information.

This book is a superb volume of explanations of mechanisms of circulatory disturbances, although it is of little value to the physician whose chief interests in peripheral vascular diseases are diagnosis and treatment. It is heartily recommended to every student of vascular diseases, since within its covers are to be found explanations of many of the puzzling phenomena observed in abnormalities of peripheral arterial circulation. It is the sort of book which can be read more than once with pleasure and referred to on numerous occasions with profit.

**Security Against Sickness: A Study of Health Insurance.** By I. S. Falk. Cloth. Price, \$4. Pp. 423. Garden City, New York: Doubleday, Doran & Company, Inc., 1936.

This study is predicated on the assumption that some plan for prepayment of sickness costs is necessary to enable certain groups of the population to obtain medical care. The author, who was the associate director of study on the administrative staff of the Committee on the Costs of Medical Care, claims that it was unfortunate during the depression years that "no program of sufficient scope was developed in this period to deal adequately with the major problems or even to hold the promise of effective action on a large or national scale." The author states that the studies represented in part in this volume, undertaken in 1933, were to seek out the principles on which constructive action should rest particularly with respect to certain problems that arise out of illness and its social and economic sequelae. Much of the statistical material is drawn from or is a restatement of the statistics contained in the reports of the Committee on the Costs of Medical Care. Material published by individuals and organizations committed to the adoption of some form of state managed medicine is used freely. Part two of the study is devoted to a review of the compulsory sickness insurance systems in Germany, France and Denmark and the compulsory health insurance in Great Britain. The reader gathers the impression from the discussion of these foreign systems that the author is disclosing these facts for the first time. The discussion of the statistics of the German system omits comments on the reduction in the amount of demanded medical service with the fall of the value of the mark and omits other interpretations of the German statistics

which would have made the discussion more fair and valuable. The author presents the basis of an American program in part three. In the nineteen fundamental principles which the author has formulated as the essentials for an American system, he has endeavored to amalgamate into one program the tenets of the proponents of state managed medicine and some of the objections of those who oppose such a system. Nowhere in these principles is it recognized that food, clothing and housing are sometimes of greater importance to the individual than medical care. This study gives a definite impression that it is an effort to revive or to extend the pronouncements contained in the Majority Report of the Committee on the Costs of Medical Care. The twelve appendixes contain reports, statements of principles and official actions of various groups on the subjects of medical and hospital service. It appears that these quotations are included only for reference. The study itself contains in 361 pages a renewed effort to establish in the United States a system of state managed medicine.

**Etude de l'influence des glandes endocrines sur le squelette.** Par le Docteur G. Coryn. Vol. XI, Fasc. 1-2, Archives Internationales de médecine expérimentale. Publiées par R. Bruynoghe, professeur d'hygiène et de bactériologie à l'Université de Louvain, et A. P. Dustin, professeur d'anatomie pathologique à l'Université de Bruxelles. Paper. Pp. 403, with 94 illustrations. Liège: Imprimerie H. Vaillant-Carmanne, S. A., 1936.

This is in reality a monograph which adequately reviews the pertinent literature referable to the influence of the endocrine glands on the skeleton. The author takes up in order the hypophysis, the sex glands, the parathyroid gland, the thyroid and the adrenals. He has included in each chapter critical analyses of the subjects reviewed and has included case reports that illustrate the conditions under discussion. This is one of the most comprehensive reviews which has appeared in a voluminous literature on this and related subjects during the past decade. For all who are interested, both because of the content of the text and because of the excellence of the bibliography, the book is recommended.

**Preventive Medicine.** By Mark F. Boyd, M.D., M.S., C.P.H., Member of Regular Field Staff, International Health Division of the Rockefeller Foundation. Fifth edition. Cloth. Price, \$4.50. Pp. 561, with 155 illustrations. Philadelphia & London: W. B. Saunders Company, 1936.

New editions of this book have succeeded each other at fairly regular intervals of three to five years since the original publication in 1920. The last previous edition was in 1932, since which time, according to the preface, many sections, including those on colds, ringworm, psittacosis, diphtheria, encephalitis, poliomyelitis, pneumonia, tuberculosis, malaria, typhus and relapsing fever have been either wholly revised or newly written. Recent developments in sewage treatment are noted, and sections dealing with mottled enamel and the rat from a public health standpoint have been added. More extensive consideration is given to the vitamins, silicosis and recent data relating to general morbidity. This edition retains the characteristics of previous editions in being easily readable and carrying a high degree of accuracy. It illustrates, however, in the section on the epidemiology of the amebic dysentery outbreak of 1933 in Chicago, the difficulty inherent in keeping any textbook thoroughly up to the minute. This section already needs revision. The continued demand for the book and the sustained quality of its contents are sufficient evidence of its practicality especially as an introduction to the subject of preventive medicine.

**Birth Control Laws: Shall We Keep Them, Change Them or Abolish Them.** By Mary Ware Dennett. Cloth. Price, \$2.50. Pp. 309. New York: Frederick H. Hitchcock, 1936.

This book is obviously propaganda for the removal of federal and state restrictions on the importation, manufacture and distribution of devices and materials wherewith to prevent conception and for the removal of restrictions on the dissemination of information concerning the prevention of conception. It was copyrighted in 1926 and bears no evidence of having been changed since that date. Those who are interested in the ten-year old views of the lay authoress concerning the development of restrictive legislation in the field of contraception, and concerning the status and future of such legislation ten years ago, may find the book interesting.

## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Cancer of Breast Allegedly Due to Trauma.**—The plaintiff, a tenant in an apartment building, sued the executrix of the owner of the building for personal injuries sustained as a result of an explosion of a hot water system. From a judgment of \$30,000 in favor of the plaintiff, the defendant appealed to the Supreme Court of Missouri, division 1, and contended, among other things, that the damages awarded were excessive.

The evidence showed that the plaintiff received fractures of her right arm, both ankles, and her skull; that she sustained severe first, second and third degree burns on her arms, neck, shoulders and back, which left residual scars; that she had impairment of function of her right hand and wrist as a result of the fracture of that arm, and that she would always suffer from headaches and dizzy spells as the result of her skull fracture. In addition to these injuries, a cancer developed in her left breast which her medical testimony tended to show was the result of trauma and due to injuries received in the explosion. She underwent three operations for the removal of the cancerous growths and finally had to have her entire breast and part of her pleura removed. The medical testimony further showed that more cancerous growths had developed which could not be removed because they were too near her lung and that they would ultimately cause her death. It was further shown that at the time of the explosion she was 29 years of age and was in good health. The Supreme Court, while it did not decide whether or not the cancer was due to trauma, held that it was proper for the jury to consider this testimony in fixing the amount of damages. The court concluded that the damages were not excessive.—*Vitale v. Duerbeck (Mo.)*, 92 S. W. (2d) 691.

**Conjunctivitis from Soot as an Occupational Disease.**—The plaintiff, during the course of his employment, was required to cut holes in chimneys as an incident to the installation of gas burning appliances. As he was cleaning the debris from the chimneys, soot would get on his hands, arms, and shirt sleeves. Habitually he would wipe perspiration from his face with his hands and sleeves. After working about a month, his eyes began to smart and, suspecting the soot as the causal factor, he notified his boss, who apparently minimized the probability that the soot had anything to do with the smarting of the eyes. The eye condition grew progressively worse, acute conjunctivitis developed in his left eye, and, in spite of medical treatment, the upper eyelid turned inward so that the eyelashes scraped the eyeball, necessitating an operation for the removal of part of the lid. After the operation, his eyes continued to trouble him more or less, especially on cold days, when there would be excess lacrimation and blurring of vision in both eyes. The plaintiff brought a common law action for damages against the company, and the Kansas City court of appeals, in a divided opinion, affirmed the judgment of the trial court for the plaintiff. (79 S. W. [2d] 1063.) On the request of the dissenting judge, however, the case was certified to the Supreme Court of Missouri, division 2.

The Missouri workmen's compensation act, at the time this cause of action arose, excluded from its operation occupational disease in any form. The principal issue in this case was whether the employee's injury resulted from an occupational disease or from an accident within the meaning of the workmen's compensation act. If the injury resulted from such an accident, then the present common law action was not maintainable, the workmen's compensation commission having original jurisdiction of the case. The question of what constitutes an occupational disease, said the Supreme Court, was discussed at length in *Wolff v. Mallinckrodt Chemical Works*, 336 Mo. 746, 81 S. W. (2d) 323 (abstracted in THE JOURNAL, Dec. 7, 1935, p. 1940), in which it was held that combined sclerosis, under the facts in the case, was not an occupational disease because the plaintiff had failed to show that it was peculiar or incident to employment. In the present case there was expert testimony which tended to prove that soot from coal

smoke contained an amount of caustic substances sufficient to irritate a person's eye and that repeated injections of soot into the employee's eyes in the manner testified to by him could have produced the injurious consequences of which he complained. Both in the *Wolff* case and in this case the evidence showed that the condition complained of could have resulted from other causes, not connected with the occupation in question. Likewise, in both cases there was no evidence that any person had ever suffered a similar trouble growing out of a similar occupation. In the present case there was no evidence to show that the employee's trouble was "peculiar and incident to the work or process" or that it was "a disease contracted in the usual and ordinary course of events, which, from the common experience of humanity, is known to be incidental to a particular employment."

The employee's evidence not only failed to show that the injury or disease was peculiar and incident to the work carried on or that it was contracted in the usual and ordinary course of events incidental to his employment, but it showed that it was in the nature of an accident. The employee did not get the soot in his eyes as a usual concomitant or result of the work he was doing, as where one breathes dust laden atmosphere in his working place. He got it on his hands in the ordinary course of his work, but it was communicated to his eyes by his own thoughtless act in wiping sweat from his face with his soot covered hand. He knew each time that occurred, because each time he felt the smarting sensation in his eyes. Had it occurred but once, or a few times within a short period, and resulted in injury, there could be no doubt that it would properly be denominated as an "accident" within the meaning of the workmen's compensation act. The producing cause of the injury in this case did not occur, however, at one time or within a few days, but, by what may be denominated a series of similar accidental occurrences, over a period of four or five weeks. The employee first felt the smarting in his eyes when he had been at work three or four weeks. When he had been working about two months his eyes became sore. This was an unexpected and unforeseen event. The event happened suddenly because, even though the infection was gradual through a period of four or five weeks, instead of a single accidental injury, there was a series of accidental injuries culminating in the same consequential result. The Supreme Court concluded, therefore, that the employee had sustained an accidental injury within the meaning of the workmen's compensation act and that therefore a court of law lacked jurisdiction over the case. The judgment for the employee was consequently reversed.—*Downey v. Kansas City Gas Company (Mo.)*, 92 S. W. (2d) 580.

## Society Proceedings

### COMING MEETINGS

- American Academy of Orthopedic Surgeons, Cleveland, Jan. 11-13. Dr. Philip Lewin, 104 South Michigan Blvd., Chicago, Secretary.
- Eastern Section, American Laryngological, Rhinological and Otolological Society, Boston, Jan. 7. Dr. D. C. Jarvis, Quarry Bank Bldg., Barre, Vt., Chairman.
- Middle Section, American Laryngological, Rhinological and Otolological Society, Chicago, Jan. 11. Dr. Alfred Lewy, 25 East Washington St., Chicago, Chairman.
- Mid-Western Section, American Laryngological, Rhinological and Otolological Society, Chicago, Jan. 11. Dr. Frederick A. Figi, 436 Tenth Ave., S.W., Rochester, Minn., Chairman.
- National Society for the Prevention of Blindness, Columbus, Ohio, Dec. 3-5. Mr. Lewis H. Carris, 50 West 50th St., New York, Managing Director.
- Puerto Rico, Medical Association of, San Juan, Dec. 18-20. Dr. Dolores M. Pinero, Ave. Fernandez Juncos, Parada, 19, Santurce, Secretary.
- Radiological Society of North America, Cincinnati, Nov. 30-Dec. 4. Dr. Donald S. Childs, 607 Medical Arts Building, Syracuse, N. Y., Secretary.
- Society for the Study of Asthma and Allied Conditions, New York, Dec. 5. Dr. W. C. Spain, 116 East 53d St., New York, Secretary.
- Society of American Bacteriologists, Indianapolis, Dec. 28-30. Dr. I. L. Baldwin, College of Agriculture, University of Wisconsin, Madison, Wis., Secretary.
- Southern Section, American Laryngological, Rhinological and Otolological Society, Memphis, Tenn., Jan. 13. Dr. Charles D. Blassingame, Physicians and Surgeons Bldg., Memphis, Tenn., Chairman.
- Southern Surgical Association, Edgewater Park, Miss., Dec. 15-17. Dr. E. Alton Ochsner, 1430 Tulane Ave., New Orleans, Secretary.
- Texas Ophthalmological and Oto-Laryngological Society, Fort Worth, Dec. 4-5. Dr. Kelly Cox, 1719 Pacific Ave., Dallas, Secretary.
- Western Surgical Association, Kansas City, Mo., Dec. 11-12. Dr. A. H. Montgomery, 122 S. Michigan Blvd., Chicago, Secretary.

## Current Medical Literature

### AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers in continental United States and Canada for a period of three days. Periodicals are available from 1926 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them. Titles marked with an asterisk (\*) are abstracted below.

### Alabama Medical Association Journal, Montgomery

G: 125-156 (Oct.) 1936

Practical Application of Physiologic Principles in Treatment of Fractures. W. C. Campbell, Memphis, Tenn.—p. 125.  
Clinical Study of Intestinal Obstruction. P. P. Salter, Eufaula.—p. 134.  
Ainbum (Dactyolysis Spontanea): Case Report with Roentgenologic and Pathologic Findings. R. H. Alldredge, Fairfield.—p. 137.

### American Journal of Pathology, Boston

12: 573-800 (Sept.) 1936

- \*Nature and Significance of Structural Changes in Lungs in Mitral Stenosis. F. Parker Jr. and Soma Weiss, Boston.—p. 573.
- Evolution and Involution of Prostate Gland. R. A. Moore, New York.—p. 599.
- Certain Cytoplasmic Inclusions of Liver Cells. A. M. Pappenheimer and J. J. Hawthorne, New York.—p. 625.
- Relation of Age and Hypertension to Structure of Small Arteries and Arterioles in Skeletal Muscle. F. C. Andrus, Minneapolis.—p. 635.
- Microtechnical Demonstration of Iron: Criticism of Its Methods. G. Gömöri, Budapest, Hungary.—p. 655.
- Regeneration of Autoplastic Splenic Transplants. D. Perla, New York.—p. 665.
- \*Meningococcic Myocarditis. O. Saphir, Chicago.—p. 677.
- Relation of Diet to Occurrence of Gastric Lesions in Rat. E. L. Howes, New Haven, Conn., and P. J. Vivier, Johannesburg, Union of South Africa.—p. 689.
- Amyloidosis of Lungs and Heart. H. W. Ferris, New York.—p. 701.

**Structural Changes in Lungs in Mitral Stenosis.**—To ascertain the significance of pulmonary and vascular lesions in mitral stenosis, Parker and Weiss studied nine cases of mitral stenosis of rheumatic origin. The lesions in the pulmonary vessels consisted of intimal thickening of the arteries and hyperplastic arteriolar sclerosis and arteriolar necrosis. The changes in the alveolar walls were marked dilatation of the capillaries, increase in the thickness of the capillary basement membrane, increase in the interstitial tissue (collagen), interstitial pericapillary edema and a tendency of the flat epithelial cells to become cuboidal in shape. The normal thickness of from 1 to 3 microns of alveolar tissue through which oxygen and carbon dioxide have to diffuse can increase up to a thickness of from 30 to 50 microns. Even in the presence of an advanced degree of thickening of the alveolar wall and of the capillary basement membrane, the alveolar basement membrane remains normal. With progressive pulmonary engorgement, first the visible capillaries increase in number, and only later do they dilate. Often the capillaries become displaced and are separated from the alveolar surface by a considerable degree of edema or by thick layers of collagen. Pericapillary and intra-alveolar edema frequently develop independently. Permanent structural alterations in the lungs caused by circulatory failure interfere with the gaseous exchange. In the causation of the pulmonary arterial and arteriolar lesions, an important part is played by the prolonged combined presence of high intravascular pressure, stagnation of blood flow and edema. The similarity between the clinicopathologic syndrome of pulmonary hypertension with malignant sclerosis and advanced cases of mitral stenosis is pointed out.

**Meningococcic Myocarditis.**—Saphir emphasizes the occurrence and the clinical and pathologic significance of meningococcic myocarditis and reports two fatal cases. Both patients (two of ten) showed meningococcic meningitis. In the first case the culture of the cerebrospinal fluid remained negative. The short stay (two days) of the patient in the hospital prevented obtaining another specimen. Smears from the cerebrospinal fluid, however, showed the characteristic gram-negative intracellular biscuit shaped diplococci. Because of this

and the presence of the intracellular gram-negative diplococci in the inflammatory lesions of the myocardium, it seems clear that the cause of the myocarditis was a meningococcic bacteremia, even though absolute proof is missing. In the second case a pure culture of meningococcus was obtained from the cerebrospinal fluid, in addition to finding the organism in the smears from the cerebrospinal fluid and in the sections of the cardiac muscle. Histologically the myocarditis is characterized by hemorrhagic exudate, the early appearance of large endothelial leukocytes, the early destruction of muscle fibers and the presence of intracellular gram-negative diplococci. The foci of necrosis are similar to those seen in the myocardium in instances of subacute bacterial endocarditis. Although in both hearts the lesions were more or less diffuse, the bundle of His was involved, showing polymorphonuclear leukocytic infiltrations and hemorrhage. In view of the prevailing opinion that the primary lesion in meningococcic meningitis is a meningococcic bacteremia (Herrick), it is not surprising that occasionally meningococci may be the cause of an isolated myocarditis. It is likely that the associated myocarditis with resulting myocardial failure seriously influences the prognosis, not only because of the impending myocardial failure but also because it seems that the myocarditis is the result of an overwhelming infection with meningococci. The abrupt death of the first patient may be explained by the overwhelming infection with meningococci, resulting in myocarditis.

### American Journal of Psychiatry, New York

93: 249-502 (Sept.) 1936

- Control of Behavior, Its Mechanism and Evolution. C. J. Herrick.—p. 249.
- Neuroses and Neuropsychoses: Relationship of Symptom Groups. A. Myerson, Boston.—p. 263.
- Petit Mal in Children. R. C. Hamill, Chicago.—p. 303.
- \*Prognosis in Psychoses Lying Midway Between Schizophrenia and Manic-Depressive Psychoses. R. C. Hunt and K. E. Appel, Philadelphia.—p. 313.
- Speaking of Weir Mitchell. B. R. Tucker, Richmond, Va.—p. 341.
- Psychiatric Hospital Therapy Designed to Meet Unconscious Needs. W. C. Menninger, Topeka, Kan.—p. 347.
- Hematoporphyrin Therapy in Affective Psychoses. E. A. Strecker, H. D. Palmer and F. J. Braceland, Philadelphia.—p. 361.
- John Addington Symonds: Case: Study in Esthetic Homosexuality. L. J. Bragman, Binghamton, N. Y.—p. 375.

**Psychoses Lying Between Schizophrenia and Manic-Depressive Psychoses.**—Hunt and Appel observed thirty patients with an even mixture of schizophrenic and manic-depressive features. Of these, eleven recovered and remained well, six recovered and had one recurrence followed by recovery, three recovered but had two or more recurrences and ten were unrecovered, never having a remission, for the most part going on to definite schizophrenia. The recovery rate is therefore roughly twice as good as it is said to be in schizophrenia and from 25 to 50 per cent poorer than that found in pure manic-depressive psychosis. The factors common to the group as a whole were early age of onset, neuropathic heredity, mixed cycloid and schizoid personality traits, a rather high incidence of somatic factors in the illness, a serious precipitating factor in more than half, and a high incidence of persecutory trend, somatic preoccupation and hallucinations.

### American Journal of Public Health, New York

26: 961-1070 (Oct.) 1936

- Sylvatic Plague Committee. K. F. Meyer, San Francisco.—p. 961.
- Study of Pollution of Shellfish Producing Area. A. P. Miller, New York.—p. 970.
- Laboratory Problems in Control of Meningococcic Meningitis. R. L. Laybourn, Topeka, Kan.—p. 979.
- Interstate Sanitation Compact and Its Implications. C. A. Holmquist, Albany, N. Y.—p. 989.
- Need for Training Facilities for Public Health Personnel in the Western States. F. T. Foard, San Francisco.—p. 996.
- Staphylococcus Bacteriophage Toxoid: Improved Staphylococcus Antigen. A. Holm, J. F. Anderson and G. F. Leonard, New Brunswick, N. J.—p. 1001.
- Expenditures in Certain Cities for Selected Health Services. Report of Subcommittee on Current Practices of Health Departments of the Committee on Administrative Practice.—p. 1008.
- Future of Maritime Quarantine in Canada. J. J. Heagerty, Ottawa, Ont.—p. 1014.
- Report of Committee on Transportation. W. L. Bierring, Des Moines, Iowa.—p. 1019.
- Newer Aspects of Amebic Dysentery. Report of Subcommittee on Research and Standards.—p. 1023.

Archives of Dermatology and Syphilology, Chicago  
34: 555-754 (Oct.) 1936

- The American Dermatological Association: Obligations and Objectives. C. G. Lane, Boston.—p. 555.
- Pruritus and Hyperesthesia Caused by Partial Sensory Denervation: Experimental Alopecia—Contribution to Study of Alopecia Areata. E. A. Aubrun, Buenos Aires, Argentina, South America.—p. 564.
- Certain Phases of Sulfur Metabolism of Skin. J. V. Klauder and H. Brown, Philadelphia.—p. 568.
- Tryparsamide: Further Questioning of Alleged Nonspirocheticidal Properties of Pentavalent Arsenical in Treatment of Human Syphilis, with Suggestion Regarding Its Readoption into Curriculum of Therapy for Early Syphilis. H. S. Campbell, Los Angeles.—p. 582.
- Halo Nevus: Leukoderma Centrifugum Acquisitum (Sutton): Leukopigmentary Nevus. S. Feldman and I. M. Lashinsky, New York.—p. 590.
- Purpura Annularis Telangiectodes: Report of Case. S. C. Way, San Francisco.—p. 605.
- \*Etiology, Pathology and Treatment of Leukoplakia Buccalis: Report of 316 Cases. F. P. McCarthy, Boston.—p. 612.
- Keratoderma and Melanoderma Accompanying Therapy with Gold Compound: Report of Case. S. Irgang, New York.—p. 624.
- Fusospirillary Gangrenous Stomatitis. E. B. Tauber and L. Goldman, Cincinnati.—p. 630.
- Pemphigus Vulgaris of Erythema Multiforme Variety. O. L. Levin, J. A. Tolmach and J. Schweig, New York.—p. 635.
- Failure to Demonstrate Spirochaeta Pallida in Cerebrospinal Fluid of Syphilitic Chinese Patients. L. Pearce, C. K. Hu and J. W. Mu, Peiping, China.—p. 639.
- Evaluation of Phytopharmacologic Test of Pels and Macht: Further Report. L. Hollander and R. J. Greb, Pittsburgh.—p. 650.
- \*Xeroderma Pigmentosum: Inherited Disease Due to Recessive Determiners. Madge Thurlow Macklin, London, Ont.—p. 656.
- Exfoliative Dermatitis: Report of Case with Autopsy. T. Butterworth, Reading, Pa.—p. 676.

**Leukoplakia Buccalis.**—After studying 316 cases of leukoplakia, McCarthy is convinced that in a high percentage of cases extensive involvement of the tongue is definitely related to syphilis but that there is no evidence to indicate a relation between the greater number of instances of leukoplakia observed elsewhere in the oral cavity and syphilitic infection. The predisposing factor in leukoplakia of the tongue is atrophic glossitis of syphilitic origin, occurring in untreated or inadequately treated patients with syphilis of long standing. This type of glossitis, with the secondary sheen of hyperkeratotic leukoplakia, presents a picture almost pathognomonic of syphilis. A characteristic picture of leukoplakia of the tongue is smooth red atrophic areas interspersed with more or less generalized leukoplakic lesions. Frequently the tongue is involved in a sclerotic process with secondary lobulation. The same surface leukokeratotic process is usually associated with this type of glossitis. In contrast to the picture presented by syphilitic glossitis is that of the reaction of the normal tongue in heavy smokers, in whom the hypertrophy and leukoplakia are confined to the papillae, producing a thick, roughened, whitish surface. Constitutional factors have been suggested as important in predisposing a person to leukoplakia or in actually causing it. A lack of vitamin A may result in atrophy of the lingual papillae and predispose the patient to lingual leukoplakia. A hereditary predisposition to degeneration or atrophy of tissue, allied to so-called cancer susceptibility, may be a factor. Leukoplakia is overwhelmingly prevalent in men. This disparity between the sexes may change in the course of time, since women have taken up the use of tobacco. The course of the disease depends entirely on the cause and on preventive and local treatment. Except for the preventive form of treatment, the removal of the irritating factor in the mouth and abstinence from the use of tobacco, the treatment of leukoplakia is unsatisfactory. When the use of tobacco is an etiologic factor and the patient continues to use it, the removal of the leukoplakic lesion is usually followed by a recurrence. The author confines treatment to the use of electrodesiccation and electrocoagulation by monopolar and bipolar high frequency current. The use of radium in the treatment of leukoplakia of the tongue associated with atrophic syphilitic glossitis is provocative of a malignant growth when the treatment is given in small doses over a long time. The use of locally applied irritating or caustic remedies is contraindicated, as there is a possibility of stimulating malignant change in the lesion. The surgical removal of the malignant lesion is indicated in some cases, but in cases of leukoplakia involving the tongue this procedure is often carried to a more radical degree than necessary and the electric current is preferable.

**Xeroderma Pigmentosum.**—Macklin declares that, contrary to statements made in textbooks of dermatology, xeroderma pigmentosum is found to be inherited, the determiners for which are passed on in the germ plasm from parent to child. It is transmitted as a recessive condition. Consanguineous marriages are found far more frequently among parents of patients with xeroderma pigmentosum than among the general population, the minimal incidence being 21.2 per cent in the series collected. The two sexes are affected equally. Because of the average small size of families, there are more families with one child affected than those with more than one. This does not preclude the possibility or even probability that in any family a second child may be affected. The disease affects males and females equally and may affect both sexes in one family.

Arch. of Physical Therapy, X-Ray, Radium, Chicago  
17: 545-608 (Sept.) 1936

- Electricity and Medicine. W. Bierman, New York.—p. 551.
- Physical Agents in Treatment of Circulatory Diseases of Extremities. N. W. Barker, Rochester, Minn.—p. 554.
- Physical Therapy and Management of Stiff Joints. M. S. Henderson, Rochester, Minn.—p. 562.
- Pathologic Aspects of Arthritis. R. K. Ghormley, Rochester, Minn.—p. 567.
- Atrophic and Hypertrophic Arthritis and Fibrositis. C. H. Slocumb, Rochester, Minn.—p. 571.
- \*Gastroscopy: Indications, Contraindications, Technic. C. W. Symonds, Pasadena, Calif.—p. 574.
- The Sixth International Medical Congress on Physical Medicine. R. Kovács, New York.—p. 581.
- Wavelength and Therapeutic Effect. H. F. Wolf, New York.—p. 583.
- Study of Colonic Roentgenograms. C. J. Drueck, Chicago.—p. 586.

**Gastroscopy.**—The extrinsic contraindications to gastroscopy that Symonds lists are aortic aneurysm, enlarged thymus or other tumor and diseases of the spine interfering with mobility, and the intrinsic ones are advanced organic disease, extensive varicosities and acute esophagitis (corrosive and necrotic). Gastroscopy is indicated in every case of persistent or unexplained symptoms referable to the stomach. The indications of special interest are acute and chronic gastritis (chronic, without or associated with additional pathologic processes), gastric symptoms with negative roentgenograms, gastric neurosis, unexplained gastro-intestinal hemorrhage, peptic ulcer, differential diagnosis between ulcer and cancer, and neoplasms. Many cases with gastric symptoms with negative roentgen observations and so-called gastric neurosis may be proved by gastroscopy to be gastritis. In the performance of gastroscopy the patient should be in a relaxed state. This is best obtained by the following procedure: 1. Two hours before operation, one capsule of phenobarbital sodium or sodium amylal is administered. 2. One hour before, one-fourth grain (0.016 Gm.) of morphine and a second capsule of phenobarbital sodium or sodium amylal are given. 3. One-half hour before, 1 cc. of a 2 per cent solution of butyn is instilled into the pharynx with a curved cannula. This is swallowed, causing a slight algia. 4. Fifteen minutes before, the lateral wall of the pharynx is swabbed on both sides with a 10 per cent solution of cocaine by holding the swab against the lateral wall for ten or fifteen seconds on each side in the region of the recurrent laryngeal nerve. This application should be made three times at intervals of five minutes. As the position of the patient is changed with the advancing of the instrument, each must be controlled by a trained assistant to synchronize with the operator's movements of the instrument. Several times during the introduction it may be necessary to aspirate fluid, as the field must be kept clean. As soon as the gastroscope enters the stomach, the light carrier is removed and the lens system with light for illuminating the stomach is put into place. This fits air tight, permitting the stomach to be inflated, which should be done carefully under guidance of the operator's eye. No more air should be introduced than is required to push the stomach away from the window and obtain a clear view. An occasional bulbful or two of air will keep the mucous membrane under clear observation. A good method to prevent overinflation is to have an assistant place a hand over the epigastrium. The whole procedure of introduction and inspection should be completed in from ten to fifteen minutes. While there is some discomfort due to the position of the patient, with proper skill and experience it should not be a painful procedure, and this assurance will do much to enlist the patient's confidence.

## California and Western Medicine, San Francisco

45: 217-304 (Sept.) 1936

- Better Obstetrics. H. A. Stephenson, San Francisco.—p. 224.  
Dermatology: Some Thoughts on Its Future. W. H. Goeckerman, Los Angeles.—p. 227.  
Apraxia. S. D. Ingham, Los Angeles.—p. 229.  
Cardiovascular Syphilis: Its Treatment. W. W. Newman, San Francisco.—p. 234.  
Bilateral Dislocations of Cervical Spine. R. Soto-Hall and K. O. Halde-  
man, San Francisco.—p. 238.  
Pyodermatoses. N. P. Anderson and S. Ayres Jr., Los Angeles.—  
p. 243.  
Cancer of Thyroid Gland: Report of Ten Cases. F. B. Settle, Long  
Beach.—p. 247.  
Amputation of Thigh: New Amputation in Distal Portion of Lower  
Third of Thigh. C. L. Callander, San Francisco.—p. 252.  
Pathologic Findings at Pars Cardia of Stomach. J. Abowitz, Los  
Angeles.—p. 255.  
Treatment of Exophthalmic Goiter. H. R. Magee, Los Angeles.—p. 257.  
Athletic Injuries. P. Thurber, Los Angeles.—p. 261.  
Mortality Lessons in Series of 4,029 Gynecologic Operations. H. K.  
Marshall and R. H. Thompson, Glendale.—p. 263.  
Cardiospasm: Successfully Treated by Hydrostatic Dilatation. G. W.  
Nagel, San Francisco.—p. 271.

**Cardiovascular Syphilis.**—The incidence of syphilis in 1,000 consecutive ambulatory patients whom Newman has seen in the private practice of cardiology was 3.4 per cent, and of cardiovascular syphilis 3.2 per cent. Of these 43.6 per cent had simple aortitis, 34.4 per cent aortic insufficiency and 22 per cent aneurysm. The blood Wassermann or Kahn reaction was positive in 87.5 per cent and negative in 12.5 per cent. For practical purposes a diagnosis of cardiovascular syphilis is justifiable in any patient with a saccular aortic aneurysm or in any patient more than 40 years of age with aortic insufficiency and a positive Wassermann reaction, provided there is no stenosis of any valve or definite history of rheumatic fever; or in any patient with a positive Wassermann or Kahn reaction, especially if he is less than 50 years of age and complains of substernal pain or dyspnea on exertion, in whom the roentgenogram shows an aortic shadow wider than one would expect for his age or blood pressure, or who has a localized dilatation of the ascending aorta, often best seen fluoroscopically in the left anterior oblique position. Adequate treatment of early syphilis is extremely effective in the prevention of clinical cardiovascular syphilis. In the presence of established cardiovascular syphilis the preponderance of evidence (although not strictly applicable to statistical analysis) is in favor of the beneficial effect of specific therapy, not only with the heavy metals and iodide but also with arsenicals in suitable dosage. The earlier in the course of the disease antisyphilitic therapy is begun, particularly before the onset of aneurysm or aortic insufficiency, the better are the chances of improvement.

## Journal of Bacteriology, Baltimore

32: 243-360 (Sept.) 1936

- \*Spread of Tularemia Through Water, as New Factor in Its Epidemi-  
ology. S. P. Karpoff and N. I. Antonoff, Tomsk, Siberia.—p. 243.  
Occurrence of Salmonella, Oranienburg Type, in an Infection of Quail.  
P. R. Edwards, Lexington, Ky.—p. 259.  
Studies of Freshwater Bacteria: III. Quantitative Aspects of Direct  
Microscopic Method. A. T. Henrici, Minneapolis.—p. 265.  
Action of Hexamethylenetetramine on Members of Colon and Aerogenes  
Groups. C. F. Poe and J. H. Williamson, Boulder, Colo.—p. 281.  
Atypical Meningococcus Isolated from Cerebrospinal Fluid in the Cal-  
cutta Meningitis Epidemic of 1934-1935. Benode Behari Sen,  
Calcutta, India.—p. 293.  
Influence of Optical Activity on Utilization of Tryptophane for Growth  
by Diphtheria Bacillus. L. C. Bauguess, Iowa City.—p. 299.  
Fermentation Reactions of Erysipelothrix Rhusiopathiae. A. W. Deem  
and C. L. Williams, Columbus, Ohio.—p. 303.  
Estimation of Bacterial Populations with Aid of Photoelectric Densi-  
tometer. L. G. Longworth, New York.—p. 307.  
Study of Characteristics of Variants Derived from Single Cells of  
Escherichia Coli. J. C. Torrey and Elizabeth Montu, New York.—  
p. 329.

**Spread of Tularemia Through Water.**—Having studied an outbreak of tularemia in 1935, Karpoff and Antonoff were able to prove by exhaustive evidence that water was the mode of spread of the disease. An epidemic broke out among people who were occupied in haymowing. In a week's time nearly all the workers had been taken ill, with the exception of one group of mowers who worked on a plot near by. The disease appeared in from two to eight days after the people came to the meadow lands. In the meadows on which the epidemic

broke out there are four eminences, divided by valleys, through which flow a river and three brooks. One group of mowers used the water of the river for drinking and in this group there did not occur a single case of illness; the other mowers, among whom the illness rate attained 100 per cent, used the water of one of the brooks, which at the time in question was running freely. Questioning of the patients showed that near the brook out of which they took their drinking water, they had seen, as they said, some water rats and had killed one of them, but all the people who had been in the fields declared these to be but isolated examples. Besides the rats a few field mice had been observed. In experiments in which the rôle of water in spreading the infection was tested, 100 per cent of the guinea-pigs infected with the water died and their organs showed characteristic pathologic-anatomic changes. From the organs of all these guinea-pigs, cultures of *Bacterium tularensis* were obtained. The cultures that were isolated from water did not differ with regard to virulence from those that were isolated from the suppurated lymph glands of the patients. When these cultures were tested on guinea-pigs, death followed in 100 per cent of cases and the organs showed changes characteristic of tularemic infection. In the outbreak in question the ports of entry were the tonsils, the mouth, the mucosa and the conjunctiva. The antral form was predominating and the typhoid form came next, while a number of patients showed the glandular-ocular form of illness.

## Journal of Lab. and Clinical Medicine, St. Louis

22: 1-112 (Oct.) 1936

- Clinical Approach to Rheumatic Patient. R. L. Haden, Cleveland.—  
p. 1.  
Differential Diagnosis of Arthritis from Standpoint of Pathology. E. P.  
Jordan, Chicago.—p. 6.  
British Activities for Control of Rheumatism. Horder, London,  
England.—p. 12.  
Essential Features in Differential Diagnosis of Rheumatoid and Osteo-  
Arthritis. R. H. Boots, New York.—p. 14.  
Differential Diagnosis Between Strümpell-Marie Disease and Osteo-  
Arthritis of Spine. J. L. Miller, Chicago.—p. 19.  
Differential Diagnosis of Acute Rheumatic Fever. R. A. Kinsella, St.  
Louis.—p. 26.  
Differential Diagnosis of Traumatic Arthritis. W. C. Campbell,  
Memphis, Tenn.—p. 30.  
Differential Diagnosis of Tuberculosis Arthritis. F. D. Dickson, Kansas  
City, Mo.—p. 35.  
Differential Diagnosis of Gonococcic Arthritis. S. L. Warren,  
Rochester, N. Y.—p. 44.  
Diagnosis of Gout and Gouty Arthritis. P. S. Hench, Rochester, Minn.  
—p. 48.  
Differential Diagnosis of Periarticular Fibrositis and Arthritis. C. H.  
Slocumb, Rochester, Minn.—p. 56.  
Differential Diagnostic Points of Constitutional Conditions Mistaken for  
Arthritis Which Produce Skeletal Aches and Pains (Arthralgias,  
Neuritis, Rheumatism). W. J. Kerr, San Francisco.—p. 64.  
Thermocouples for Medical Laboratory: Guiding Principles and Methods  
of Constructing Apparatus for Surface Cavity, and Intramural Ther-  
mometry. P. C. Foster, New Orleans.—p. 68.  
\*Rapid Flocculation Method for Diagnosis of Syphilis: Technic for  
Spinal Fluid. F. Rytz, Minneapolis.—p. 82.  
Simple and Inexpensive Device for Filling Culture Tubes and Bottles.  
E. G. Hastings, Madison, Wis.—p. 84.  
Examination of Mouse Ovaries in Aschheim-Zondek Test Followed by  
Castration for Quantitative Testing of Estrogenic Substances. A. I.  
Weisman and Rosalind L. Moses, New York.—p. 86.  
Complete Postmortem Examinations Through Surgical Wounds. S. H.  
Polayes, Brooklyn.—p. 87.  
Quantitative Estimation of Protein by Rapid Method of Kerridge.  
T. Findley Jr., St. Louis.—p. 89.  
New Instrument for Determination of Venous Pressure by Direct  
Method. L. Cohen, Brooklyn.—p. 94.  
Hinton Test for Syphilis: Second Study of Its Clinical Value in 3,000  
Patients. L. Hollander, Clara R. Schlesinger and C. L. Schmitt,  
Pittsburgh.—p. 97.

**Rapid Flocculation Method for Diagnosis of Syphilis.**—Since the committee appointed by the United States Public Health Service, on the evaluation of serodiagnostic tests for syphilis in the United States, concluded its first report in 1935, Rytz has modified the rapid flocculation method, as first applied to spinal fluid (original abstracted in THE JOURNAL, May 25, 1935, p. 1937). The modified technic renders the test for spinal fluid more sensitive. A strongly positive reaction consists of large, irregular flocculate particles in a crystal-clear fluid. A weakly positive test shows smaller flocculate particles in a slightly hazy fluid. The negative reactions show a hazy fluid with unflocculated emulsion particles. He has compared 185 reactions by this method with the Wassermann test as

carried out in his laboratory. This flocculation method showed fifty-nine positive reactions against thirty-six positive Wassermann tests on the same samples. Of the fifty-nine positive cases by the flocculation method, forty-seven showed positive blood tests, and eight patients with negative blood tests had a definite syphilitic history. Two patients with some symptoms of neurosyphilis remain, at this time, unverified by clinicians.

### Journal of Nervous and Mental Disease, New York

84: 373-496 (Oct.) 1936

- First Fifty Years of the Philadelphia Neurological Society. W. G. Spiller, Philadelphia.—p. 373.
- Three Cases of Mind Blindness (Visual Agnosia): One Due to Softening in Occipital Lobes (Autopsy), One Due to Anterior Poliomyelitis (Nonfatal), One Due to Drugs (Transient). J. M. Nielsen and K. O. Von Hagen, Los Angeles.—p. 386.
- \*Brain Trauma: II. Residual Lesions in the Brain in Cases of Old Head Injury. N. W. Winkelman, Philadelphia, and J. L. Eckel, Buffalo.—p. 399.
- Psychogenic Factors in Polyuria of Schizophrenia. W. R. Miller, Worcester, Mass.—p. 418.
- Hoffmann Sign: Its Incidence in University Students. D. H. Echols, Ann Arbor, Mich.—p. 427.

**Brain Trauma.**—Winkelman and Eckel studied five cases of the posttraumatic state for a period of from four months to four years. Clinically the patients showed personality change and convulsive seizures as the most common manifestations. Focalizing signs and symptoms were present in only one case. Activation of a preexisting syphilitic process resulted in the formation of a gumma at the point of trauma. Histopathologically the patients showed focal lesions of hemorrhage and softening, with scattered petechial lesions of the same sort. The changes in the brain in general were to be attributed to the original concussion with the secondary changes due to anoxemia from increased intracranial pressure. These involved the ganglion cells and blood vessels in addition to a universal glial overgrowth. Adhesions of the pia-arachnoid to the cortex and to the dura were present in nearly all the cases. In one case an abscess developed at the point of impact in a patient with an old middle ear disease, with generalized convulsions occurring seven days after injury, although intracranial pressure signs did not occur until three years later.

### Journal of Pediatrics, St. Louis

9: 279-416 (Sept.) 1936

- \*Mediterranean Disease—Thalassemia (Erythroblastic Anemia of Cooley): Associated Pigment Abnormalities Simulating Hemochromatosis. G. H. Whipple and W. L. Bradford, Rochester, N. Y.—p. 279.
- Observations on Morphology of Erythrocytes in Mediterranean Disease—Thalassemia (Erythroblastic Anemia of Cooley). W. L. Bradford and Jane Dye, Rochester, N. Y.—p. 312.
- Intravascular Clotting in Abandoned Fetal Channels in the New-Born. W. A. Mulherin and J. Krafka Jr., Augusta, Ga.—p. 318.
- Outline of the Pediatricist's Relation to Mental Hygiene. C. A. Aldrich, Winnetka, Ill., and B. S. Veeder, St. Louis.—p. 323.
- \*Presence of Meningococcus in Nasopharynx of Normal Individuals, and Bactericidal Property of Blood Against Meningococcus. N. Silverthorne, Toronto.—p. 328.
- Mediastinal Lymphosarcomas in Childhood. F. W. Wiglesworth, A. E. Childe and A. Goldbloom, Montreal.—p. 331.
- Evolution of Adult Type of Tuberculosis from the Childhood Type: Evidence in Favor of Endogenous Reinfection: Preliminary Report. J. A. Johnston, Detroit.—p. 350.
- Study of Comparative Value of Cod Liver Oil, Viosterol and Vitamin D Milks in Prevention of Rickets and of Certain Basic Factors Influencing Their Efficacy. Martha M. Eliot and E. M. Nelson, Washington, D. C.; D. J. Barnes and Florence A. Browne, Detroit, and Rachel M. Jess, Washington, D. C.—p. 355.

**Mediterranean Disease—Thalassemia.**—Four years ago, Whipple and Bradford reported the clinical and necropsy features in a typical case of Mediterranean disease. As the pigment abnormalities there described had not been noted in other published reports, they could not stress their importance. They now report three more cases with complete necropsy reports. They have had opportunity to study certain organ tissues from two other cases. All this material gives them reasonable security in their belief that the pigment deposits are just as characteristic of this disease complex as are any other factors. The disease presents a uniform clinical picture consisting of a progressive anemia beginning usually during the first two years of life and terminating in death in most instances before adolescence. The blood picture, though not distinctive, is uniform and is characterized by marked irregularity in the size and shape of the red cell, fragmentation and erythroblastosis. All stages of erythropoiesis may be seen

in the peripheral blood. The hemoglobin distribution within the matured red cell may be very irregular. After splenectomy, showers of nucleated red cells always occur. Definite retardation of growth results. As the disease progresses, the typical mongoloid features develop, probably because of bone changes. Enlargement of the spleen is proportionally greater than that of the liver, but, when the former is removed, the latter seems to increase in size. To this group of clinical features the addition of the abnormalities that occur in the bones, the unusual pigment disturbances, and the racial and familial distribution complete a characteristic syndrome. Therefore the disease is due to some racial, inherited defect which is responsible for the abnormalities of the hematopoietic tissues (of the order of pernicious anemia), the bone changes (of the order of acromegaly) and the pigment abnormalities (virtually identical with hemochromatosis). This suggests a deficiency state that may be remediable when completely understood and gives adequate grounds for a variety of therapeutic tests. The anemia may be classified as microcytic and hypochromic. The following therapeutic measures failed to modify the clinical picture: blood transfusions, plasma and cell extracts, primary or secondary anemia liver extracts, fetal liver extract, spleen extract, raw pancreas, adrenal cortex extract, estrogenic substance, vitamin B<sub>1</sub> concentrate, iron and copper.

**Meningococcus Carriers.**—Silverthorne investigated the carrier rate in a noncontact population and the bactericidal property of the blood of normal persons and of noncontact carriers against various strains of meningococci. A total of 1,227 swabs were taken monthly from sixty-three normal healthy adults over a period of two years; 19.8 per cent of these were positive for the meningococcus. On these monthly examinations the number of positive individuals varied from 16 to 28 per cent. No less than 41 per cent of the group of sixty-three were positive at one time or another during the period of study; eleven were persistent, thirteen intermittent and two transient carriers. Eleven noncontact carrier strains were examined by the bactericidal and mouse-mucin tests; three of these strains were found to be virulent and eight were found to be avirulent. Carriers of the meningococcus possess bactericidal power in their blood to their respective strains, whether these strains are virulent or avirulent. Also, samples of blood from carriers possess bactericidal power to certain virulent cerebrospinal fluid strains. The determination of the virulence of strains of meningococci by means of the mouse-mucin and bactericidal tests may serve as a useful means of selecting strains for the preparation of therapeutic serum.

### Laryngoscope, St. Louis

46: 647-730 (Sept.) 1936

- Fluoroscopic Bouginage of Stricture of Esophagus. H. P. Mosher, Boston.—p. 647.
- Recurrent Lipoma-Myxochondroma-Fibroma of Larynx: Case Exhibiting Unique Features. A. Palmer and L. Mehler, New York.—p. 653.
- Scopulariopsis in Otitomycosis. M. E. Pinkerton and E. L. MacQuiddy, Omaha.—p. 670.
- Interesting Cases of Lateral Sinus Thrombosis. H. M. Scheer, New York.—p. 674.
- Hemolytic Streptococcal Meningitis with Recovery. G. H. Poirier and B. E. Lovesey, Boston.—p. 680.
- Ear Drumhead Model. G. W. McAuliffe, New York.—p. 686.
- Incidence of Sinusitis and Nasal Polyps in Bronchial Asthma. S. F. Kelley, New York.—p. 692.
- Interlobar Abscess Probed and Drained Through Cribriform Plate: Cure of Asthma. I. Dowling, Albany.—p. 699.
- \*Effect of Intranasal Phenol Application in Hay Fever: Quantitatively Studied by New Intranasal Swab Test with Pollen Extracts. F. Vistreich, New York.—p. 717.

**Intranasal Phenol Application in Hay Fever.**—Vistreich observed the effect of intranasal phenol application in twenty-eight consecutive cases of early and late hay fever. The treatment is not followed by stormy reaction or long convalescence. From 90 to 100 per cent relief was obtained in 75 per cent of the cases, from 75 to 90 per cent relief in 8.3 per cent, from 50 to 75 per cent relief in 12.5 per cent and no relief in 4.2 per cent. By intranasal swab tests with serial dilutions of pollen extracts it was proved that this treatment produces an actual decrease in the sensitivity of the nasal mucosa to pollen. By periodic testing it has been found that this state of relative insensitiveness is not permanent. Its average duration in the present group of cases was approximately from seven to eight weeks.

# Maine Medical Journal, Portland

27: 175-194 (Sept.) 1936

- Recent Advances in Gastro-Intestinal Surgery. W. V. Cox, Lewiston.—p. 175.  
Electrosurgical Treatment of Cervical Lacerations, Erosions and Endocervicitis. R. L. Barrett, New York.—p. 178.  
Tumors: Definition and Classification. J. Gottlieb, Lewiston.—p. 184.

27: 195-212 (Oct.) 1936

- Carcinoma of Breast. C. M. Robinson, Portland.—p. 195.  
Carcinoma of Uterus. M. F. Ridlon, Bangor.—p. 198.  
Cancer of Gastro-Intestinal Tract. E. H. Risley, Waterville.—p. 200.  
Pathology of Carcinoma of Breast, Pelvis and Gastro-Intestinal Tract. A. H. Morrell, Augusta.—p. 205.  
Appendicitis and the Schilling Count. R. A. Beliveau, Lewiston.—p. 207.

**Electrosurgical Treatment of Cervical Lacerations.**—Barrett finds that electrosurgical diathermy with the Hyams technic, the Cherry Ende technic or the simple ball coagulation technic is suitable for the treatment of the majority of the cervical lacerations, erosions and endocervicitis. The method is not free from danger. Too extensive destruction of tissue may lead to primary or secondary hemorrhages. Deep destruction of tissue high in the cervical canal, especially if there has been carbonization, tends to heal with excess fibrous tissue with its consequent impairment of drainage, stenosis, sterility and dystocia. Curtis has shown that stenosis and cavitation in the upper cervix with secondary infection and lack of drainage is a frequent cause of irritant leukorrhea, epithelial metaplasia and leukoplakia. A thorough dilation of the cervix is indicated if the treatment is to be carried above the level of the lower third of the canal. The dilation should be repeated after healing occurs if there is any sign of constriction. Carbonization and deep destruction of tissue should be avoided. Electrosurgical diathermy is contraindicated in the presence of an active or latent pelvic infection.

# New England Journal of Medicine, Boston

215: 517-568 (Sept. 17) 1936

- Principles of Therapy in Patients with Congestive Heart Failure. T. R. Harrison, Nashville, Tenn.—p. 517.  
\*Cancer of the Breast: End Results, Massachusetts General Hospital, 1927, 1928 and 1929. C. C. Simmons, G. W. Taylor and H. D. Adams, Boston.—p. 521.  
Address to the Staff of the Worcester City Hospital, May 1936. S. B. Woodward, Worcester, Mass.—p. 526.  
Artificial Pneumothorax in Treatment of Tuberculosis. J. D. Spring, Nashua, N. H.—p. 530.  
Sexual Sterilization in New Hampshire. S. Stone, Concord, N. H.—p. 536.  
Progress in Laryngology. L. A. Schall, J. R. Richardson and W. Mueller, Boston.—p. 546.

215: 569-604 (Sept. 24) 1936

- Efficacy of Medical Treatment in Essential Hypertension. R. S. Palmer, Boston.—p. 569.  
Nonspecific Urethritis: Its Causes, Differential Diagnosis, Examination Routine and Treatment. N. D. Shaw and W. M. Burnet, Chicago.—p. 572.  
Ruptured Ovarian Cyst in Childhood: Report of Case. G. C. King and C. H. Hawes, Fall River, Mass.—p. 576.  
Legal Aspects of Industrial Dermatoses. J. G. Downing, Boston.—p. 577.  
My Personal Experience with Extramural Service. F. C. Phelps, Vergennes, Vt.—p. 580.

**Cancer of the Breast.**—Simmons and his co-workers report the five year end results of 159 cases of cancer of the breast treated by radical operation at the Massachusetts General Hospital during the three years 1927, 1928 and 1929. There were 43.4 per cent of five year cures following radical operation. Of the fifty-eight persons in whom the disease was limited to the breast, forty-four were living without evidence of recurrence from five to seven years after operation. Of the 101 patients in whom the axillary glands were involved, twenty-five were living without evidence of disease from five to seven years after operation. The prognosis was found to depend more on the extent of the disease and the pathologic index of the malignant condition of the tumor than on any other factors. This coincides with the observations in the former groups studied. The median duration of the disease before operation of the cases without axillary involvement was three months. The median duration with axillary involvement was six months. The importance of early diagnosis and treatment is shown by comparing results of operation in these two groups. Preopera-

tive roentgen treatment was given to a certain number of these patients. It had no effect on the results when the cases were placed in comparable groups. The dosage was much less than that advocated at the present time but was similar to that given at other institutions during the period under investigation.

# Public Health Reports, Washington, D. C.

51: 1327-1362 (Sept. 25) 1936

- Acute Response of Guinea-Pigs to Vapors of Some New Commercial Organic Compounds: XIII. Methyl Formate. H. H. Schrenk; W. P. Yant, J. Chornyak and F. A. Patty.—p. 1329.

# Radiology, Syracuse, N. Y.

27: 261-390 (Sept.) 1936

- Primary Bone Tumors in Children. L. S. Goin and R. L. Carroll, Los Angeles.—p. 261.  
\*Asbestosis: Roentgenologic Review of Seventy-One Cases. J. R. Shull, Charlotte, N. C.—p. 279.  
Influence of Wavelength on Depth Dose as Measured by Physical and Biologic Means. P. S. Henshaw and D. S. Francis, New York.—p. 293.  
Acute Gastric Dilatation of Stomach During Attack of Migraine. J. Kaufman and I. Levine, Brooklyn.—p. 301.  
Some Lawsuits I Have Met and Some of the Lessons to Be Learned from Them (Tenth Instalment). I. S. Trostler, Chicago.—p. 303.  
Radiation Therapy in Cancer of Cervix. L. C. Kress and M. C. Reinhard, Buffalo.—p. 318.  
Syphilis of Esophagus. P. S. Avery, New Brunswick, N. J.—p. 323.  
Radioresistant Ewing Sarcomas of Bone. A. Brunschwig, Chicago.—p. 328.  
Small Intestine: Inflammatory Lesions and Accompanying Reactions. L. G. Cole and R. E. Pound, New York.—p. 330.  
X-Ray Diffraction Studies of Tendon and Intestinal Wall Collagen. G. L. Clark and J. A. Schaad, Urbana, Ill.—p. 339.  
Typhoid Spine. A. Bowen and C. L. McGehee, Fort Sam Houston, Texas.—p. 357.  
Significance of X-Ray Control in Artificial Fixation of Mediastinum Supplementing Closed Intrapleural Pneumonolysis in Cavernous Pulmonary Tuberculosis. F. Baum, Newark, N. J.—p. 359.  
Improved Method for Making Reproductions from X-Ray Films. B. H. Nichols and J. C. Root, Cleveland.—p. 362.

**Asbestosis.**—Shull defines asbestosis as a disease of the lungs caused by the inhalation of asbestos dust and fiber. It is classified as a pneumoconiosis and is characterized roentgenologically by an early interstitial fibrosis with progression into a terminal diffuse fibrosis. As the disease progresses there develops a filmy, hazy appearance of the lung, which has been aptly described as a "ground-glass appearance." The right side of the heart is frequently enlarged in the moderately advanced cases, and it is a common observation in the markedly advanced cases. Another finding characteristic of this disease is the presence of peculiar golden colored, crustation-like bodies in the lungs of these patients. Clinically, the most striking symptom is undoubtedly dyspnea. During the latter part of 1934 the author examined the chests of seventy-one of 100 workers who had been dismissed from local asbestos plants. All had undergone physical examination before they were referred for roentgenologic study and were found to be physically disabled. The average age was 34.4 years and the time of exposure varied from sixteen months to twenty-one years. In eight recognized cases of tuberculosis (11.3 per cent) in the entire series the degree of infiltration was only slight to moderately advanced and one or both upper lobes were involved. Only two cases appeared active. Since these examinations were made, five patients have died. Of the remaining sixty-six patients, twenty-one have been reexamined recently. In studying the original and follow-up roentgenograms of the series and contrasting them with a number of plates of other types of pneumoconiosis, it has been possible to make certain observations which seem to be peculiar to this group of asbestosis cases as a whole. Furthermore, it was obvious that a classification could be effected. Since the one constant feature of all these cases is unquestionably the diffuse fibrosis, this sign was taken as the "yard stick" in compiling such a classification (slightly, moderately and markedly advanced cases). Of sixteen slightly, thirty-five moderately and twenty markedly advanced cases, 37.5, 62.8 and 95 per cent respectively showed a right-sided hypertrophy, 0, 28.6 and 45 per cent pericardial and pleural thickening, 12.5, 48.6 and 80 per cent a high left diaphragm and 6.3, 65.7 and 95 per cent an emphysematous type of chest.

## FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

## British Medical Journal, London

2: 573-610 (Sept. 19) 1936

Anemia of Pregnancy. W. C. Smallwood.—p. 573.

\*Hypochromic Anemias of Pregnancy and Puerperium. H. W. Fullerton.—p. 577.

Preventive Measures in Dermatology. R. M. B. MacKenna.—p. 581.

\*Cervical Gland Tuberculosis: Case Against Surgery. B. C. Thompson.—p. 584.

Homework. W. Brockbank.—p. 587.

**Hypochromic Anemias of Pregnancy.**—Fullerton found that the average hemoglobin levels of poor women fell during pregnancy up to the thirty-seventh week of gestation and then rose slightly before delivery. A rise in the hemoglobin level occurred from forty-eight hours post partum to from six to eleven months after delivery. Even in women of the poor classes the transference of iron from the mother to the uterus and its contents is compensated wholly or to a large extent by dietary iron. In cases in which this demand exceeds the retention of dietary iron, the degree of maternal iron deficiency which results is only slight. When hypochromic anemia in pregnancy is marked, anemia has probably existed before the pregnancy but has been made more apparent by physiologic hydremia. Therefore the conception that uncomplicated pregnancy frequently produces a severe degree of hypochromic anemia should be discarded. The blood loss at parturition varies greatly in degree and often produces severe hypochromic anemia.

**Cervical Gland Tuberculosis.**—Observation of forty-four patients led Thompson to conclude that tuberculosis of the cervical glands is seldom, if ever, completely removed by surgical means, and that so-called radical excision is in practice usually a partial operation. This partial excision can be justified only if proved by results to be superior to other methods of treatment. The high rate of local recurrence and the degree of permanent disfigurement due to cicatrization found in this series of cases indicates the reverse. It is also shown from the figures of other observers that the operation does not prevent the subsequent development of pulmonary tuberculosis. Additional disadvantages are the inconvenience caused to the patient by hospitalization, the frequent necessity for repeated operations, and the risk of paresis from nerve injury. It is held that conservative treatment has none of these disadvantages and ultimately produces results in every way more satisfactory.

## Glasgow Medical Journal

8: 121-200 (Sept.) 1936

The Doctor's Back Garden. J. Bridie.—p. 121.

Diagnosis and Treatment of Bone Sarcoma. W. B. Coley.—p. 128.

Dr. William B. Coley: Postscriptum. A. Young.—p. 165.

## Irish Journal of Medical Science, Dublin

No. 129: 565-612 (Sept.) 1936

Looking and Seeing (Movements and Fixation of Eyes). G. Holmes.—p. 565.

\*Late Ether Convulsions: Derangement of Heat-Regulating Mechanism of Body as Major Factor in Their Causation: Preliminary Note. F. W. G. Smith.—p. 577.

Treatment of Appendicitis. R. A. Stoney.—p. 591.

**Late Ether Convulsions.**—Smith illustrates the close connection between what are called "ether convulsions" and heat hyperpyrexia. The literature of both subjects indicates that ether convulsions and heat hyperpyrexia are identical. The phenomena of postoperative thyroid crises may be a manifestation of heat effects in a disordered heat regulating mechanism. The treatment adopted for these crises follows closely that of heat hyperpyrexia. Some cases of death from status lymphaticus may have a similar origin. Hadfield remarked (1928) that heat was the sole common factor in all the ether convulsion cases which he summarized. The most important prophylactic measure would be the recognition of the fact, generally, that heat hyperpyrexia can occur in the modern operating room in temperate countries, a sense of proportion being maintained, as the reported cases occur in only 1 in 5,000 administrations. Surgical patients in hot weather periods should be encouraged to drink large quantities of liquids, and their urine should be kept alkaline. There should be a sufficiency of salt in the diet.

The rectal temperature and pulse rate of patients for operation should be recorded prominently on their charts. In hot weather the substitution of scopolamine for preoperative atropine should be considered. Potential subjects of heat hyperpyrexia requiring immediate operation should have their knee jerks tested first and be operated on in a cool room; excessive covering of the body by rubber sheetings should be avoided and the head slightly raised if possible. Anesthesia could be induced and maintained with the head resting on an ice bag or an ice bag in close contact with the carotid vessels. Induction with chloroform or a mixture should be considered. The acute case should be diagnosed early by the taking of the rectal temperature and treated on general heat hyperpyrexial lines modified by the circumstances present. Pentobarbital sodium or *n*-methyl-cyclohexenyl methylmalonyl-urea could be given for the convulsions. After-treatment is extremely important, as recurrences of hyperpyrexia are frequent and the cases must be watched carefully for some days.

## Medical Journal of Australia, Sydney

2: 251-282 (Aug. 22) 1936

Avenues of Progress in Maternal Welfare. R. M. Allan.—p. 251.

Intrapertoneal Adhesions. L. M. McKillop.—p. 259.

Treatment of Acute Retention of Urine in General Practice. C. Edwards.—p. 260.

Some Notes on "Evipan" and "Evipan Sodium." A. G. Bennett.—p. 266.

## South African Medical Journal, Cape Town

10: 565-596 (Aug. 22) 1936

Principles of Treatment of Acute Empyema. F. D. du T. van Zyl.—p. 567.

Eventration of Diaphragm and Its Clinical Aspects. L. I. Braun.—p. 570.

Forensic and Sociological Aspects of Dagga Problem in South Africa. J. M. Watt and Maria G. Breyer-Brandwijk.—p. 573.

Suprasellar Meningioma: Case. D. J. Wood.—p. 580.

## Chinese Medical Journal, Peiping

50: 885-1012 (July) 1936

Pulmonary Tuberculosis in Diabetes Mellitus. S.-H. Wang, C.-P. Chang and C. K. Hsieh.—p. 885.

\*Cirrhosis of Liver. I. Etiology, Symptomatology, Liver Function Tests and Gastric Juice Findings. C.-F. Wang.—p. 891.

Id.: II. Calcium, Total Proteins, Sugar and Chloride Distribution in Various Body Fluids. C.-F. Wang.—p. 903.

Natural Infection of Phlebotomus Chinensis with Flagellates Morphologically Indistinguishable from Those of Leishmania Donovan. C. J. Sun, Y. T. Yao, H. J. Chu and C. C. Wu.—p. 911.

**Cirrhosis of Liver.**—In reviewing a series of fifty-four cases of cirrhosis of the liver Wang found that thirty-two of the cases (59.3 per cent) occurred in the fourth and fifth decades of life. The disease occurs largely in the working classes, especially in farmers. Alcohol, syphilis and malaria may be considered etiologic factors in its production. The galactose tolerance test, detection of urobilin in urine and the van den Bergh reaction were valuable for detecting and estimating the amount of liver derangement. Ten of twenty-seven fractional gastric analyses (37 per cent) demonstrated achlorhydria. Nearly all patients had leukopenia and half had anemia. Only five cases (9.2 per cent) showed hematemesis. Symptoms of gastric disorder were present in all but two of the cases; roughly one half of the patients gave a history of gastric disturbance before the onset of ascites. Enlargement of the liver was found in nine cases (16.6 per cent), enlargement of the spleen in eighteen (33.3 per cent) and thirty-four (63 per cent) presented jaundice.

## Japanese Journal of Gastroenterology, Kyoto

8: 121-170 (Sept.) 1936

Study on Gastric Movement After Amputation of Vagus Nerves. S. Hattori.—p. 121.

Influence of Blood in Cases of Renal Disturbances on Carbohydrate Metabolism of Liver. Y. Kansai.—p. 136.

Experimental Studies on State of Functional Promotion of Liver (Hyperhepatism). I. Influences of Several Chologogues on Liver Function. Y. Matsuoka.—p. 145.

Id.: II. Incretory Glands and Hyperhepatism. Y. Matsuoka.—p. 152.

Id.: III. Influence of Lecithin on Liver Function. Y. Matsuoka.—p. 158.

Id.: IV. Influence of L-Asparagic Acid on Liver Function. Y. Matsuoka.—p. 166.

**Bull. et Mém. de la Soc. Méd. des Hôpitaux de Paris**

52: 1211-1276 (July 20) 1936. Partial Index

- Hodgkin's Disease with Eosinophilia and Rapid Evolution. C. Aubertin and A. Pergola.—p. 1214.  
Hyperfolliculin Syndrome. Gilbert-Dreyfus, A. Mathivat and A. Wimphen.—p. 1234.  
Pathogenesis of Cardiac Epilepsy. Riser, Planques and Petel.—p. 1242.  
\*Partial Icterus. N. Fiessinger and G. Boudin.—p. 1259.

**Partial Icterus.**—The type of icterus which is characterized by localization in one segment of the body, most often in the upper portion, is discussed by Fiessinger and Boudin. This localization, when it occurs, is only the consequence of an edematous infiltration of dependent portions. The first patient was a woman with the common type of Laënnec's cirrhosis. When this patient was first observed the icterus was generalized, but, as ascites and edema developed, the location of the icterus became the reverse of that of the edema. This local washing of the icterus could be experimentally reproduced by the authors by the injection of physiologic solution of sodium chloride into the subcutaneous tissue stained with the characteristic icterus color. The interest of this phenomenon of partial icterus seems to be purely symptomatic. The mechanism is simply the washing away of icterus by edematous infiltration of certain regions. This result, however, is aided by the fact that edema is produced at a stage when the bilirubinemia is decreasing and by the simple dilution of the bilirubin by the excess of fluid.

**Presse Médicale, Paris**

44: 1449-1464 (Sept. 16) 1936

- Generalized Peritonitis from Typhoid Intestinal Perforation. A. Mouchet.—p. 1449.  
Physiopathogenesis of Lesions in Infectious Diseases, Especially Bacillary Infection. R. Pons.—p. 1451.  
\*Local Reactions of Capillaries to Histamine and Acetylcholine in Course of Different Varieties of Hypertension. E. Dicker.—p. 1454.

**Reactions of Capillaries to Histamine in Hypertension.**—Dicker studied the local capillary reactions in different varieties of hypertension under the influence of histamine and acetylcholine. His method of observation differed from that of Ernste and Snyder only in the fact that he calculated simultaneously in the same person the surface of the erythema produced by the intradermal injection of 0.05 cc. of a 1:1,000 solution of histamine and that produced by the intradermal injection of a drop of a 1:100 solution of acetylcholine. As a result of his studies he concluded that in the normal state the extent of the erythema following the intradermal injection of histamine or acetylcholine attains a mean of 25 and 17 sq. cm. respectively. It varies from one subject to another but in the same person preserves a satisfactory consistency in different examinations. In patients with essential hypertension and arteriosclerotic hypertension the surface area of the erythema produced does not differ from that of normal subjects. In nephritic hypertension, malignant hypertension and malignant nephrosclerosis, the erythema produced by the injection of these substances is slightly increased but the surface area is strongly reduced. In the course of certain infections that may produce acute nephritis, such as scarlet fever and streptococcal tonsillitis, the intensity and area of reaction to histamine and acetylcholine are reduced during the period of resultant hypertension. These facts, the author believes, constitute an important argument in favor of the conception which attributes the development of essential hypertension and malignant hypertension to two distinct mechanisms. The latter is probably associated with a state of constriction of the peripheral vessels.

44: 1465-1480 (Sept. 19) 1936

- \*Skin Reactions to Tuberculin in Children from Birth to the Age of 2 Years. P. Nobécourt and S. B. Briskas.—p. 1465.  
Artificial Production of Thyroid Hyperplasia. H. Zondek.—p. 1469.

**Skin Reactions to Tuberculin in Small Children.**—Nobécourt and Briskas studied the tuberculin reactions of 6,607 nurslings less than 2 years of age. These tests were performed over a period of fifteen years, from 1921 to 1935 inclusive. Terminal states of anergy were encountered in 8.9 per cent of the tuberculous patients. Furthermore, almost all the cases of tuberculosis in this age group were in an active state. The number of infants infected with tuberculosis was small during the first months but increased with age. The number of patients

with active tuberculosis was roughly parallel. During the second year the proportion of infected infants who had had inactive tuberculosis was much greater than during the first year of life. Also during the second year infected girls more often than boys had active tuberculosis. The latter fact may be explained perhaps on the basis of certain predispositions.

**Revue Médicale de la Suisse Romande, Lausanne**

56: 657-720 (Sept. 25) 1936

- \*Tuberculous Infection in Children of Country. P. Rochat.—p. 657.  
Bilateral Pleuropulmonary Perforation with Necropsy: Case. F. Cardis and A. Gilliard.—p. 669.  
Appearance of Autonomous Pocket on Visceral Pleura in Course of Artificial Pneumothorax. J. Stephani, T. Stephani and R. Kirsch.—p. 681.  
Technic of True Pleural Endoscopy Before Cauterization of Adhesions. M. O. Mistal.—p. 687.

**Tuberculous Infection in Country Children.**—In 1935 Rochat studied 450 students by means of the roentgen ray and the Pirquet reaction. The Pirquet test was found negative in 80 per cent of the subjects from 12 to 16 years of age and in 90 per cent of the younger children. These facts have a considerable diagnostic importance not only for the little ones but also for the older children. A year later the children with positive tuberculin tests reacted in an identical fashion. The papule showed the same aspect as in the previous test. Poor hygiene conditions do not constitute the determining factor in the dissemination of tuberculosis. Tuberculosis is a disease of wretched lodgings only if there are also patients with the disease present. Of sixty children with positive reactions there were only ten instances in which the source of the contagion was known. The latter fact suggests the probability that the infection of the children took place most often by carriers of the germs who were in apparent good health.

**Clinica Medica Italiana, Milan**

67: 583-654 (Sept.) 1936

- Intramural Hematoma from Rupture of Abdominal Aorta: Possible Atheromatous and Syphilitic Origin of Aortic Dissecting Aneurysm: Case Report. A. Baccaredda.—p. 585.  
Pulmonary Localization of Actinomyces Albus with Generalization: Case. G. Ferrali and P. De Filippi.—p. 611.  
\*Hydrophilia in Tissues and in Blood in Cholecystitis and Catarrhal Jaundice. E. Polt.—p. 641.

**Hydrophilia in Tissues and Blood in Cholecystitis.**—Poli calls attention to the relation that exists between liver diseases and disturbances of the water metabolism. The author found that in patients suffering from cholecystitis or from catarrhal jaundice the water is retained by the blood and the tissues. The factors that cause the tendency of blood and tissues to water retention or actual hydrophilia in these patients are stasis of the portal circulation, defective elaboration of bile salts, dysfunction of the liver in controlling the balance of the organic electrolytes (because of a defective chemistry of the bile secretion) and changes in the amount of lipids contained in the blood serum. These factors, which become apparent in the course of cholecystitis and catarrhal jaundice, are capable of disturbing the organic water metabolism.

**Policlinico, Rome**

43: 1855-1898 (Oct. 19) 1936. Practical Section

- \*Amenorrhea in Diabetes. R. Bompiani.—p. 1855.  
Dermo-Epidermal Grafts: Technic and Results. D. Clemente.—p. 1861.  
Hemotherapy. S. Colaneri.—p. 1864.

**Amenorrhea in Diabetes.**—Bompiani says that amenorrhea and the development of involutive changes of the genitalia in diabetes are secondary to alterations of the anterior lobe of the hypophysis and of the diencephalon. By reviewing clinical and experimental reports in the literature it is obvious that the anterior lobe of the hypophysis and the hypothalamic nuclei are the structures by which the sugar metabolism and the phenomena of the uterine-ovarian cycle are controlled. On the one hand, hypophyseal syndromes are frequently associated with changes in the sexual function and alterations of the genitalia and, on the other, anatomic alterations of the hypophysis and of the diencephalon are often found in diabetes of definite insular origin. According to the author, the hypophyseal-hypothalamic pathogenic mechanism of amenorrhea explains the frequent production of amenorrhea preceding diabetes and the

reestablishment of the uterine-ovarian cycle and the regaining of fecundity in women suffering from amenorrhea and treated with insulin.

### Radiologia Medica, Milan

23: 733-836 (Oct.) 1936

\*Generalized Osteopathy with Multiple Symmetrical Striae of Reabsorption (Milkman Syndrome). V. Dall'Acqua, P. Levi and L. Bordoli.—p. 733.

Prolonged Roentgen Therapy at High Voltage and Fractional Doses in Relation to Economy in Centers for Treating Cancer. F. Perussia.—p. 750.

Postbronchographic Infiltration of Lung by Iodized Oil: Pneumography Following Bronchography. A. Vallebona.—p. 756.

Importance of Roentgen Study of Lung in Interpreting Modifications of Lung in Course of Retractable Collapse Therapy. A. Biasini.—p. 773.

**Generalized Osteopathy with Symmetrical Striae.**—The skeletal disease to which Dall'Acqua and his associates refer develops in persons beyond the second decade of life. It is progressive and fails to respond to treatment. The characteristics of the disease are pain in the bones, disturbances in gait and a peculiar multiple symmetrical involvement of the skeleton. The roentgen examination of long and flat bones shows, in several of them, multiple symmetrical transverse bands (pseudofractures) of increased transparency, about 3 or 4 mm. long, which involve the bone superficially or in its entire depth. The pseudofractures do not cause separation and displacement of the fragments. The condition is the result of local reabsorption of the bone. It is different from Looser's zones of decalcification. The bands are located at the epiphysis and the metaphysis rather than at the diaphysis. At the site of the pseudofracture none or only a slight periostic reaction takes place. The pseudofractures occur simultaneously in corresponding bones on the two sides of the skeleton, but the size and exact location of the fractures may be different. During the evolution of the disease the viscera remain normal, as proved by clinical and roentgen examinations. The blood phosphatases are increased. A differential diagnosis is made by the authors between the disease and rickets, osteomalacia, osteogenesis imperfecta and multiple myeloma of the bones. The authors conclude that the disease is rare and probably due to nervous and vascular disturbances. Their case is the third reported in the literature.

### Semana Médica, Buenos Aires

43: 961-1032 (Oct. 8) 1936. Partial Index

Hypogastric Iliae Artificial Anus. R. Finochietto.—p. 961.

\*Sympathetic Nervous System of Blood Vessels in Thrombo-Angiitis Obliterans. M. Yanovsky.—p. 968.

Examination of Mediastinum: Etiologic Diagnostic Value in Lung Diseases. G. A. Bosco.—p. 991.

Bronchial Asthma from Point of View of Allergy. J. A. Bozzola.—p. 1002.

Double Congenital Abnormality: Roger Disease and Stenosis of Isthmus of Aorta; Case. Q. Lombardi.—p. 1004.

Edema from Jaundice Liver Diseases: Case. R. Cernich, J. M. Palazón and J. D. M. de Lellis.—p. 1008.

**Thrombo-Angiitis Obliterans.**—Yanovsky names thrombo-angiitis obliterans (of Buerger's type) neuro-angiitis obliterans, indicating involvement of the sympathetic nerves and blood vessels in the pathologic process. The condition generally occurs in the blood vessels of the extremities in patients ranging in age from 20 to 35 years with an emotional, psychic and neurovascular predisposition. The early neurovascular lesion consists in inflammation and fibrosis of the adventitia and its sympathetic fibers. Degeneration of the sympathetic fibers and disorganization of the vascular layers from the adventitia to the intima and endothelial alterations follow. The lumen of the blood vessels is occluded by a thrombus (which is secondary to the endothelial changes) or by the propagation of fibrosis from the outer to the inner layers of the vessels. In normal peripheral blood vessels, sympathetic fibers exist only in the adventitia. The presence of sympathetic fibers in the inner layers of the blood vessels in thrombo-angiitis obliterans is due to the inward propagation of the lesion and disorganization of the vascular tissues. Certain nervous oval cells which can be seen at the adventitia of the blood vessels are peripheral cells and not multipolar ganglions. Probably they are concerned in maintaining the tonus of the local vessels. The formation of a thrombus is not specific in thrombo-angiitis obliterans. It may

exist in certain vascular diseases with an etiopathogenesis different from that of thrombo-angiitis obliterans. The endocrine glands have a direct action on the sympathetic nerves of the blood vessels. Nervous lesions develop in certain chronic forms of thrombo-angiitis obliterans. Arteriosclerosis is the third stage in the evolution of the disease. It may be followed by calcification of the vascular walls. Typical clinical forms of thrombo-angiitis obliterans are biologically and anatomopathologically different from syphilis. The administration of anti-syphilitic treatment does not induce changes in the evolution of the disease. The condition can be easily mistaken because of the fact that the intravascular alterations of chronic syphilitic arteritis are similar to the occlusion in thrombo-angiitis obliterans.

### Medizinische Klinik, Berlin

32: 1161-1200 (Aug. 28) 1936. Partial Index

Exostoses of Foot and Their Clinical Significance. O. Dittmar.—p. 1161.  
Treatment of Chronic Polyarthritides of Childhood. G. Hohmann.—p. 1163.

\*Early Diagnosis of Wandering Epiphysis on Head of Femur During Adolescence. C. Mau.—p. 1166.

Neuropathic Articular Disorders and Their Early Roentgenologic Diagnosis. G. von Pannwitz.—p. 1171.

Pathogenesis of "Injuries by Muscular Traction." H. Burchhardt.—p. 1174.

\*Treatment of Congenital Clubfoot. H. Gardemin.—p. 1177.

Plastic Repair of Roof of Acetabulum in Coxa Valga Luxans and in Irreducible Congenital Luxation of Hip. J. Baumann.—p. 1182.

**Wandering Epiphysis on Head of Femur.**—Mau stresses that, if young persons, particularly boys, at about the age of puberty complain of pains in the hips, fatigue and occasional limping, the physician should take into consideration that a beginning loosening and wandering of the epiphysis might exist. It is important to recognize the beginning slipping of the epiphysis of the femoral head first backward and then downward, because the complete development of the adolescent form of coxa vara, the adduction contracture in connection with the position of outward rotation, is practically irreparable and usually leads to a deforming arthrosis of the hip, which may result in early invalidism. After discussing the normal position of the epiphysis of the femoral head and after pointing out that there are definite constitutional types that are especially predisposed to the development of adolescent coxa vara, the author discusses the pathogenic mechanism, pointing out among other factors that investigators have detected signs of softening in the epiphyseal cleft of the patients with this disorder. Moreover, in a number of cases the anamnesis reveals a mild trauma. He discusses the symptomatology and diagnosis of this condition and says that, once the "wandering" of the head begins and the femoral neck starts to turn forward, the patients generally complain of pains in the knee, and the first signs of inhibited movement in the hip joint appear. A comparison of the movements of the two hip joints usually reveals that the inward rotation as well as the outward movements of the diseased hip are restricted. A shortening of the leg is usually not perceptible during the beginning stages of the disorder, but a slight emaciation of the musculature of the thigh often appears quite early. These comparisons between the two sides are of course without value if both sides are involved. Roentgenoscopy is of great help, particularly in the obscure cases. In discussing the method of roentgenography, the author stresses that the roentgenogram made in the sagittal direction is especially valuable, in that it reveals a certain loosening and widening of the epiphyseal line. The sagittal exposure should be supplemented by a frontal one. Moreover, a pelvic roentgenogram should be taken in Lauenstein's position, for it permits a frontal exposure of the neck of the femur. Once the beginning of the epiphyseal wandering has been recognized, the author applies, without previous redressment maneuvers, a plaster-of-paris cast to the pelvic region. After four weeks he changes to a mild extension and begins with careful exercises in bed and soon thereafter with walking exercises with the aid of a splint, splinting being continued for several months. With this treatment applied to the early recognized deformity, the author obtained complete cure. He describes several cases and mentions as another important roentgenologic sign a reduction in the vertical diameter of the spherical cap of the femoral head, which appears also on the roentgenogram that is made in

agittal exposure. He concludes his report by stressing the necessity of immediate treatment after the recognition of the early signs.

**Treatment of Clubfoot.**—According to Gardemin, the aim of the treatment of congenital clubfoot is the production not only of a normal external shape of the foot but also of a normal shape of the skeletal system. Only after this has been accomplished is it permissible to talk of a morphologic and functional cure. Before discussing the treatment as such, the author discusses the theoretical possibilities and requirements that must be fulfilled to accomplish this aim. He shows that it is important to treat the clubfoot as early as possible. The treatment of clubfoot, no matter at what age, follows the same principles, but the technic differs. The correction of the abnormal position does not take place in the bandage but is accomplished by molding redressements according to the method of Lorenz. The bandage is applied to preserve the correction that has been obtained. In treating clubfoot in a nursing, the author performs manual redressements every day for two weeks. He fixes the region of the ankle joint with the thumb and forefinger or with the closed fist of the one hand, so as to avoid fracture of the thin tibia and fibula. The other hand grasps the heel or the anterior portion of the foot and attempts to free the bones of the tarsus from their confined position by repeated pressure. The author does not consider it advisable to correct the malformation in one session and regards the gradual loosening of the contracted ligamentous apparatus the better method. He stresses that, in order to avoid injuries, the redressements should be done only by some one who thoroughly understands the method. After the manual redressements have effected correction, the result is fixed by means of a plaster-of-paris cast. In older children and in adults, manual correction is usually no longer possible and appliances of various types are used. The author uses the apparatus of Stille-Lorenz and of Alsberg, the Phelps-Gocht clamp and König's wedge. He does not strive to overcome the deformity completely in one session but is at first satisfied with a mild degree of correction. A plaster-of-paris cast is put on after every redressement and is left on for four weeks. The tensions within the foot may not exceed a moderate degree, or the resulting trophic changes may cause serious sequels. If redressements do not have the desired results, surgical interventions must be tried. To insure good permanent results, a careful after-treatment is essential. For a while the foot must be held in the corrected position by means of orthopedic devices, for there is danger of relapse if this is not done.

### Wiener klinische Wochenschrift, Vienna

49: 1301-1328 (Oct. 23) 1936. Partial Index

- \*Mechanism and Therapeutic Significance of Metabolism Increasing Action of Dinitrophenol Derivatives. H. Handovsky.—p. 1301.
- Methods of Investigation of Human Heredity. Berta Aschner.—p. 1304.
- Individual and Superindividual Aims in Psychotherapy. H. Kogerer.—p. 1307.
- Disputed Questions in Acute Necrosis of Pancreas. R. Demel.—p. 1309.
- \*Carcinoma of Small Intestine with Chronic Invagination: Case. E. Knirsch.—p. 1313.
- Thyrotoxic Pseudo-Angina Pectoris. S. Kreuzfuchs.—p. 1314.

**Dinitrophenol Derivatives.**—In a review of the history of dinitrophenol derivatives, Handovsky points out that the attention of toxicologists has been directed to these substances because they have been used for the coloring (yellow and orange-red) of foods for approximately five decades. As early as 1885 it was found in animal experiments that the ingestion of these substances may result in polypnea and increased temperature. The first knowledge about the localization of the action of these substances was obtained through investigations on the toxicology of 2,4-dinitrophenol, large quantities of which were used in French gunpowder factories during the World War. These investigations were carried on because of numerous cases of poisoning among the workers of these factories. In later years the studies were continued and, as regards the localization of the action of the dinitrophenol derivatives, it was found that in several species of animals there was a considerable increase in loss of heat by polypnea and sweats, a rise in temperature and an enormous increase of the metabolism, of the loss of glycogen and of the oxygen consumption. Later experiments revealed that the dinitrophenol derivatives have no central

point of attack and that the heat production effected by dinitrophenol takes place in the muscle cells. Thus the action of these substances is a cellular one. The author cites the studies of other investigators and then states that he himself was able to prove that the dinitrophenol derivatives are capable of stimulating the dehydrogenation processes. He describes and discusses experiments from the outcome of which he concludes that the dinitrophenol derivatives increase the metabolism and the temperature by stimulating the combustion of substances with a high combustion heat. These substances are formed in the organism even under normal conditions, but ordinarily their caloric value is not being utilized. Because the dinitrophenol derivatives facilitate the combustion of body materials, attempts were made to use them in the treatment of obesity. However, it was discovered that medication with dinitrophenol involves many dangers and so the therapeutic use was discouraged. Nevertheless, the author thinks that experimental therapy should make further studies on the dinitrophenol derivatives. It should be investigated whether their capacity to prevent the division of cells might be of value in the treatment of cancer. Moreover, they might prove helpful in irradiation and in fever therapy. In the treatment of obesity the combination of subtherapeutic doses may prove helpful.

**Carcinoma of Small Intestine with Chronic Invagination.**—Knirsch, after pointing out that cancerous degeneration of the small intestine is not as rare as was formerly believed and after citing statistics about the incidence of this form of cancer, reports a case of primary cancer of the small intestine, which is noteworthy because the cancer resulted in chronic invagination. Moreover, in spite of the fact that the patient had diabetes and a myocardial defect, the invagination tumor could be radically removed in a single operation and the patient could be discharged as cured.

### Polska Gazeta Lekarska, Lwów

15: 789-808 (Oct. 11) 1936

Malignant Tumors. J. Jasiński.—p. 789.

- \*Congenital Disposition to Malignant Tumors. N. Pende.—p. 793.
- Action of "Pituspasmine" and of Parturient Women's Serum on Uterine Muscles. S. Boguszewski.—p. 797.

**Congenital Disposition to Malignant Tumors.**—Pende says that in malignant tumors there is a dynamic-humoral condition of the entire body or of special organs which predisposes the tissues to the development of malignant tumors under the influence of external causes but which alone would not be sufficient for the development of a tumor. Experiments on both human beings and animals disclose various causes, but the natural cause has not been proved. Cancer is a constitutional disease and local treatment by surgery or other means is a mistake. He points out that the Irish and the Basque are especially predisposed to cancer, while the Negro and the Indian are seldom affected by malignant tumors, and he feels that the amount of intake of cholesterol may have some influence in the matter. However, he thinks that it is unwise at this time to give any cause for the predisposition to cancer for the different races. Heredity is an important factor, as is sex, since women are more often affected than men. Age should also be taken into consideration. Finally, there does not seem to be any doubt that there must be some relationship between the various endocrine glands and cancer, such as between cancer of the stomach, the skin and the intestine and overactivity of the thyroid and vagotomy and tumors of the female organs, with hyperactivity of the anterior part of the hypophysis.

### Problemy Tuberkuleza, Moscow

Pp. 1203-1338 (No. 9) 1936. Partial Index

- Histogenesis of Tuberculous Inflammation. G. E. Zeman.—p. 1204.
- Histogenesis of a Tubercle. M. G. Ivanova.—p. 1210.
- \*Pathologic Anatomy of Dust Tuberculosis. I. I. Moshkovskiy.—p. 1218.
- Lung and Metabolism. S. M. Leytes.—p. 1226.
- Sources and Modes of Development of Pulmonary Tuberculosis. B. M. Khmelniitskiy, M. Ya. Karliner and K. A. Pushkar.—p. 1232.
- Method of Determining Functional Capacity of Cardiovascular System in Pulmonary Tuberculosis. A. E. Rabukhin, A. I. Gurevich and L. A. Spivak.—p. 1246.

**Pathologic Anatomy of Dust Tuberculosis.**—On the basis of an investigation of 2,600 miners of the Donbass region, Moshkovskiy concludes that pneumoconiosis exists as an inde-

pendent disease entity. Clinical, roentgenologic and biologic data obtained over a long period demonstrated that a preponderant majority of cases of pneumoconiosis were not tuberculous. He feels justified in dividing his cases into those of pneumoconiosis caused exclusively by dust, and those of conio-tuberculosis in which both factors exist—dust and tuberculous infection. Clinical, pathologic and histologic studies of his cases fail to support the hypothesis that the nonspecific fibrosis resulting from coniosis can act as a defensive mechanism against a tuberculous infection. Postmortem examinations of several of his cases demonstrate the possibility of development of a grave tuberculous process with caseous tissue reaction on a basis of intensive coniotic fibrosis. This concept of a mechanical blockade is further contradicted by the localization of tuberculous caseating foci in the center of coniotic areas. Peribronchial and perivascular distribution of purely coniotic areas without elements of tuberculous infection was likewise found. This testifies to pneumoconiosis as an independent process. The pneumoconiosis node differs from the tuberculous focus by the absence of lime and central necrosis. Tubercle bacilli in sputum are less frequent in coniotuberculosis even in the presence of considerable destruction of the pulmonary tissue, probably because of limited connection between cavities and the bronchi. Coal pigment spreads by way of lymph and blood and in advanced cases may be seen deposited in the various viscera, particularly the liver and spleen.

### Finska Läkaresällskapets Handlingar, Helsingfors

79: 667-754 (Aug.) 1936

Examination of Perception of Color in Applicants for Positions in Transportation Service. O. Heinonen.—p. 667.

\*Bone Marrow in Hemolytic Jaundice, Together with Contribution to Question of Nature of Megaloblasts. G. Tötterman.—p. 686.

\*Treatment of Lichen Ruber Planus (Especially with Roentgen Irradiation and with Injections of Bismuth): Comparative Investigation on Results. C. E. Sonck.—p. 702.

**Bone Marrow in Hemolytic Jaundice.**—In Tötterman's case of hemolytic jaundice, the patient being a woman aged 33, treated in 1935, liver therapy proved ineffective, succeeding treatment with arsenic for several weeks was without marked effect, but splenectomy was followed by rapid improvement. The first sternal puncture, shortly after admission, showed 1,893 nucleated red blood corpuscles per 400 white corpuscles; there were 1,217 normoblasts, 470 macroblasts, twenty-two normoblasts with mitosis, 110 normoblasts with amitosis, twenty macroblasts with mitosis and one mature megaloblast, together with fifty-three large cells with nongranulated basophile plasma and a round, finely reticulated nucleus with two or three nucleoli. As in the blood, the number of reticulocytes in the bone marrow was 0.6 per cent. On the second sternal puncture, about three weeks later, there were 259 normoblasts, sixty macroblasts, two normoblasts with mitosis, three macroblasts with mitosis, and seven promegaloblasts. A third sternal puncture, seven months after splenectomy, when the blood had been normal for a considerable time, except for the continued lowered resistance and microcytosis, revealed a normal white blood picture with ninety-nine normoblasts, five macroblasts, five macroblasts with mitosis and one uncertain promegaloblast to each 400 white cells, affording further proof of the effectiveness of splenectomy in hemolytic jaundice. In this case both the mitotic and particularly the amitotic erythropoiesis in the bone marrow was more pronounced than in any case of pernicious anemia. The patient was not achylic and apparently had all of Castle's "intrinsic factor," which protected her against a disturbance in the maturing process of the erythroblasts, so that mainly normoblasts and normocytes developed.

**Treatment of Lichen Ruber Planus.**—Sonck states that of seventy-three patients presenting lichen ruber planus given roentgen treatment, 42.5 per cent recovered, 35.4 per cent improved and in 21.9 per cent the results were negative. Of twenty-nine treated with a bismuth preparation 38 per cent recovered, 41.4 per cent were improved and 20.7 per cent were unchanged. Of seventeen treated with arsphenamine, 29.4 per cent recovered, 41.2 per cent were improved and 29.4 per cent were unchanged. Bismuth is cheaper than arsphenamine, more convenient and, properly given, is safe. Especially for patients

who do not bear treatment with arsenic and for whom roentgen therapy is not available, attempted treatment with bismuth compounds is advocated. Improvement sometimes appears slowly. Some cases prove resistant. On the whole, recent cases seem more amenable to roentgen and bismuth treatment than older cases.

### Uppsala Läkareförenings Förhandlingar, Uppsala

42: 1-207 (July 1) 1936

New Points of View on Early Embryonal Development. D. E. Holmdahl.—p. 1.

Contribution to Question of Development of Premature Children Up to First Years of School. Gert von Sydow.—p. 21.

\*Hyperparathyroidism with Multiple Thrombi: Case. J. Mellgren.—p. 35.

External Kidney Pelvis: Compilation from Literature and Two Personal Cases. P.-E. Enbark.—p. 47.

\*Influence of Dinitrophenol 1-2-4 on Tar Cancer in White Mice. K. A. Vannfält.—p. 55.

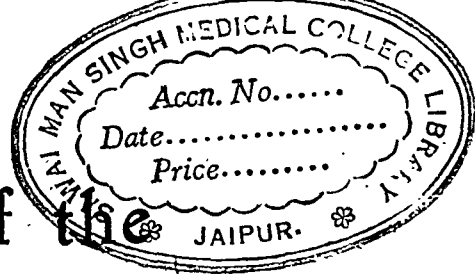
\*Pointing Test: Test of Some Hypotheses for Its Clinical Applicability. W. Behrman.—p. 67.

Continued Investigations on Occurrence of Vitamin D in Baltic Herring. G. Blix and Gösta Englund.—p. 203.

**Hyperparathyroidism with Multiple Thrombi.**—In Mellgren's patient, a woman aged 41, previously well, there was sudden onset of continued vomiting and exhaustion, slight infection of the upper respiratory tract, fever and increased sedimentation, with signs of slight kidney disturbance and marked and increasing leukocytosis. Pain in the back appeared and death occurred after two weeks, with a picture of paralysis of the heart. Necropsy showed an enlarged parathyroid gland and calcium deposits in the heart and kidneys, together with multiple recent thrombi in the kidneys and lungs. From experimental results cited the author concludes that the parathyroid extract increases the coagulation ability of the blood as well as its calcium content, and the thrombi in this case are thought to be related to the parathyroidism.

**Influence of Dinitrophenol 1-2-4 on Tar Cancer.**—Vannfält's results afford no evidence that dinitrophenol 1-2-4 in the dosage of 10 mg. per kilogram of body weight daily or from 10 to 20 mg. every second or third day affects the development of tar cancer in mice.

**Pointing Test.**—Behrman's study of spontaneous pointing in normal persons supports the view that the results depend largely on the method applied. Of eleven methods tested, only three are characterized as new. He finds that, in the methods in which the arms approach their aim during an upward movement, the arms deviate outward from the median line; these methods give more marked results after irritation and the effect is increased when no correction is made after each pointing and is further heightened by simultaneous pointing with both arms. In method 10, belonging to this class, in his opinion the best method, there is an average deviation of  $3.79 + 0.08$  (0.25) cm. for the right arm and  $3.33 + 0.08$  (0.25) cm. for the left arm. The deviation from the variation field of spontaneous pointing increases after calorization, reaching the maximum at about the tenth pointing. Irrigation of one ear with cold water affects the arm of the opposite side, irrigation with warm water the arm of the corresponding side. The caloric test with 100 cc. of warm water causes a stronger reaction than the test with 5 cc. of warm water; the test with cold water results in a more marked reaction than that with warm water, although the difference with regard to the body temperature is the same in the two cases. The deviation in the first pointing to a certain extent determines the deviations in succeeding tests. A table is given for use in determining whether the patient points spontaneously inside or outside the limits of the variation width in normal persons, and for determining whether or not a given vestibular irritation affects the pointing arm. The author asserts that by application of his method about two thirds of the cases react at least in one arm after irrigation of an ear, and two thirds of the persons in whom one irrigation causes no reaction in an arm react when the other ear is irrigated once. After rotation with ten revolutions within ten seconds there is a 93 per cent probability of obtaining some irritation reaction. The diagnostic effect of pointing can be increased by repeated irritation tests. No certain relation between dizziness and pastpointing was established.



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## THE GYNECOLOGIC ASPECT OF HUMAN STERILITY

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The work of Max Huhner on postcoital examination marked the beginning of that interest in the problem of human infertility which has continued without interruption during the past twenty-three years. From the earliest recorded times the childless marriage has been a major problem both for the individual and for society; but only since the beginning of the present century has genuine progress been made toward the correction of this maladjustment.

All recent advances in the diagnosis and treatment of sterility are based on a better understanding of its etiology. These new ideas may be reduced to three fundamental principles.

First, in the great majority of cases of human infertility the cause of that defect is not some single abnormality but rather the summation or totality of several factors. Complete diagnostic studies show that the average childless couple presents 4.79 factors, each of which diminishes to some extent their capacity for conception. It is, of course, always possible that a single abnormal condition may render sterile an individual and consequently any mating into which that individual may enter: this would be true of a blockade in the genital passages, for example, or of any complete impediment to the production of normal gametes. But such factors of absolute sterility, as it may be called, are found in only about 30 per cent of clinical cases. Seventy per cent of couples who apply for the relief of childlessness show no single condition that would account for their difficulty. They do show, without exception, a group of causative factors of which each one lowers their fertility to some extent and of which the sum total depresses that fertility below the threshold of conception.

Second, the multiple factors just discussed are partly genital and partly constitutional. Stock breeders and veterinarians have long recognized the influence that states of constitutional depression exert on the fertility of animals; likewise laboratory workers have found it

easily possible to depress fertility by inducing various types of general debility. But only in recent years have physicians taken account of this important fact. In my opinion, the general or constitutional condition is fully as important as the local or genital condition, with relation to the fertility of an individual. It is worth while to cite briefly the evidence on which this opinion is based. To begin with, one cannot neglect the practical experience of the poultry yard and of the stock farm. Again, constitutional depressions in human beings are accompanied by certain objective evidences, such as a lowered metabolic rate, which naturally indicate a faulty grade of endocrine performance. Also, males of the sort under discussion almost invariably show poor spermatogenesis when the semen is mathematically evaluated; and, as supplementary evidence, their semen usually improves when the constitutional fault is corrected. Finally, the total number of cases in which the elimination of a constitutional depression has resulted in the clinical relief of sterility is now sufficiently large to rule out any likelihood of pure coincidence. I should perhaps add that, according to the ideas of my associates, states of constitutional depression include not only endocrine insufficiencies but also various nonendocrine conditions such as chronic intoxication, metabolic disturbances of extrinsic origin, debility and general inferiority.

Third, the several factors present in each case are seldom limited to one partner. My associates and I find that, among the couples who consult us, only about 10 per cent of the husbands and 5 per cent of the wives are free from all objectively demonstrable evidence of infertility. This statement becomes less surprising on reflection than it might at first seem; for the sterility of a mating is commonly determined by a number of factors sufficiently large so that, on mere probability, one would anticipate some division of them between the two partners. Even when an absolute cause is present, there are still in the background other factors, which become operative when the more obvious impediment is removed. I have long ceased to speak of sterility in men or in women; a more accurate concept, in my opinion, is that of the sterile mating, a union between two relatively infertile individuals.

The foregoing remarks on the causation of human sterility make clear the complex nature of the problem and the need for an elaborate diagnostic approach. It goes without saying that the urologist and the gynecologist must make detailed studies of the genital organs; no less important are the services of the internist and the endocrinologist. Complete investigation of every case is necessary in order to obtain the best results; for there could be no worse fallacy than to accept the first discovered abnormality as the sole

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The conclusions reported in this paper are based on an organized group study of sterility, in which I have had the collaboration of Dr. Harold Bowditch, Dr. Charles H. Lawrence, the late Dr. Allan Winter Rowe, and Dr. Samuel N. Vose. Data other than gynecologic are contributed by my associates. The laboratory-endocrinologic work has been done at the Evans Memorial for Clinical Research and Preventive Medicine, a department of the Massachusetts Memorial Hospitals.

and only cause in the case under consideration, on an unjustifiable assumption that no other causative factor is present. In the past, unfortunately, this illogical procedure has been the rule.

I appreciate this opportunity of conferring with the Section on Urology, and I wish to express my admiration of those contributions which it has made in the domain of this discussion. The relative unimportance of male genital abnormalities has been shown and, notably, a technic for the accurate evaluation of semen, a study of which the results represent with admirable precision the several grades of male fertility, has been developed.

Those aspects of the problem which fall within my own field can be briefly summarized. Rareties being excluded, there are four important groups of gynecologic factors of infertility:

The first of these is female genital hypoplasia. Whether such a defect is an end result of overcivilization, I do not know; but the fact remains that today numbers of women possess genital organs scarcely developed beyond that stage of differentiation which would be normal in a 10-year old girl. Hypoplasia is inimical to fertility in several respects, chiefly as regards immaturity of the ovaries, which ovulate imperfectly if at all.

Second, the endocervical mucus is often so thick and tenacious that spermatozoa are unable to penetrate it. Faults of this sort are demonstrated by postcoital examination, a test which should always be performed though it never eliminates the need for study of a condom specimen. Abnormal viscosity of the endocervical secretions may derive from several causes, among which the commonest are poor drainage, due to a pinhole os externum, and endocervical infection. Faulty sex hygiene, with resultant chronic passive congestion, is a factor never to be overlooked.

Third, partial or complete obstruction of the fallopian tubes constitutes an obvious impediment to conception. No doubt gonorrhea plays the major rôle in producing this particularly unfortunate factor. Nevertheless other causes are to be considered: developmental defects, for example, and nonvenereal inflammations.

Fourth, and last, there is the serious matter of deficient oogenesis. Here one gets into exceedingly deep waters. For not only must the ovary be mechanically free to liberate mature egg cells, but the gland must also be able to create that divine spark, that sum total of hormones, which will endow the ovum with adequate vitality. And, on both counts, failures are numerous. Many an ovary is inhibited on purely mechanical grounds, when retention cysts or a thick tunica albuginea interferes with the normal maturation and rupture of follicles. It may also happen that graafian follicles never tend to mature; in such cases the cause is to be sought in some generally depressed state, most often in an absence of that stimulation which should normally come to the ovary from the anterior lobe of the pituitary.

The gynecologic investigation of a sterile mating involves a long series of routine procedures: history and abdominopelvic examination, with particular reference to certain details that are not of great importance in ordinary gynecologic cases: measurement of the uterine index, tests of tubal patency, study of the endocervical secretions, and postcoital examination. Most of these tests are generally familiar, and it is unnecessary to discuss them in detail. There remain two diagnostic items which deserve a special word of comment.

Since the factor of hypoplasia is exceedingly important in every case of deficient oogenesis, the gynecologist naturally desires to evaluate defects of this sort with the utmost accuracy. For the purpose of quantitative estimation, my clinic has used for ten years a measurement which we call the uterine index. This is an expression of the ratio between the length of the uterine body and the length of the cervix; the relation is 0.25 in infantile cases and 0.75 or more in cases in which normal development has been attained. Figures thus obtained are far more significant than a casual notation of such stigmas as an elongated and anteflexed cervix.

The most obscure detail in every case of sterility is the question of effective ovulation. No method of examination has ever been sufficient to determine whether or not the ovaries actually liberate mature and normal eggs. Menstruation obviously proves nothing in this respect; some women flow regularly without complete follicular activity in their ovaries, while others conceive even during times of amenorrhea. A great deal of interesting work has recently appeared on the problem of so-called anovular bleeding; that is to say, of a uterine flow not dependent on the rupture of a graafian follicle with consequent formation of a normal corpus luteum. I believe that in all such discussions there is a certain tendency to separate arbitrarily, and perhaps wrongly, the idea of mature and complete follicular activity, and the concept of a follicular cycle which, even though abortive, may still produce a certain number of lutein cells. That is why I do not accept without some question the conclusions based on endometrial biopsies, however well they appear to indicate successive events in the physiologic program of the ovary.

The way of treatment is clearly indicated by a complete diagnostic study. In general, one should aim to correct all the factors demonstrated as inimical to fertility. A multiple therapeutic approach gives results far better than those obtained in older days, when treatment was limited to one or two items. It does not follow, however, that complete treatment should be undertaken from the start, since good judgment often dictates the wisdom of eliminating certain factors before others are attacked. Notably, it is essential to assure an adequate grade of male fertility before subjecting a wife to any therapeutic measures directed primarily against sterility.

In the gynecologic field, methods of treatment are fairly well standardized. Endocervical infections may be cured with the cautery, and, if a pinhole os prevents free drainage of the secretions, a small posterior median discission can be done. Insufflation of gas and injection of iodized oil relieve many partial tubal obstructions; in fimbriated-end occlusions salpingostomy is a valuable procedure, provided this is invariably accompanied by postoperative measures that will maintain the established patency. Deficient oogenesis calls for the services of the endocrinologist or of the internist more often than for those of the gynecologist; nevertheless I am of the opinion that conservative operations on the ovaries, notably the resection of retention cysts, are of great utility for the purpose of restoring normal follicular function. The factor of hypoplasia remains exceedingly difficult to manage in the adult patient, in whom all developmental urge or growth impulse has been lost. But there exists in this connection a brilliant opportunity to practice preventive gynecology, for it appears that most of such developmental arrests can

be foreseen and forestalled by proper attention to the menstrual behavior and to the general health of the adolescent girl. I would say that the entire project of preventing human infertility is more important and more hopeful than everything that can be accomplished at present in the way of curing established cases.

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## METHODS IN SPERM ANALYSES AND EVALUATION OF THERAPEUTIC PROCEDURES

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The problem of human infertility has opened a new realm for thought and ingenuity, for it entails the unique implication of a pure creative endeavor within the practice of medicine. The proverbial mission of the physician has long been that of alleviating pain, combating and controlling disease and observing and assisting the physiologic processes of the body in health and in illness. The ultimate objective of the correction of disturbed fertility is the production of a new individual from a source that has hitherto been barren. Such a commendable motive deserves from the profession the serious deliberation it requires.

From Biblical times until the present century the wife has borne the burden of blame for failure to produce offspring, for until twenty years ago no serious studies of male fertility had been undertaken. It is now generally agreed that the husband bears the chief or partial responsibility in approximately one fourth of the involuntary barren marriages and accordingly his examination is now regarded to be as important as that of his wife.

This past indifference to the male was undoubtedly due to numerous influences and misconceptions. The erroneous belief that potency was ample evidence of fertility has happily been dispelled. Fear of offending the masculine ego by questioning his fertility is no longer a formidable hazard, yet certain men are still apprehensive that a previous venereal disease might be disclosed as a result of such an examination. It is likely, however, that the real explanation for the negligence toward the male was due to the lack of time and inclination on the part of the physician to consummate a complete investigation.

The purpose of any study of infertility is not only to detect absolute sterility but rather to arrive at an estimation of the relative fertility of each partner, each to be considered separately and together as a marital unit. The power of reproduction depends on the sum total of the details of the germ plasm, the physical status of the subjects and their ability to have coitus. If the combination of these factors is below "the threshold level for fertility," no issue will result from the marriage even though each constituent may possess varying positive degrees of fecundity. There is therefore a difference in the grade of fertility of each marriage as well as of the individual. This is demonstrated in instances in which one person proves fruitful to one mate yet barren to another. It accordingly becomes the goal of the physician to detect and possibly

overcome the causes of absolute sterility or to enhance the existing fertility to a level at which conception may occur. The latter may involve the correction of a number of faults in one or, more usually, in both partners.

The appraisal of the semen constitutes the chief and final index of male fertility, and one must be able to recognize relative degrees of seminal deficiency and learn to correlate these with the clinical data to determine whether the husband is the chief or contributing factor to the barren marriage. It is difficult to construct an intelligent opinion if the examiner is deprived of an examination of the male patient or is without a report of the status of the female. Such is the case, however, if the semen alone is delivered for analysis.

If it is borne in mind that spermatozoa are able to exhibit motility longer in low temperatures than at body heat and that the ingredients of the average condom are hostile to their life, much error and confusion will be avoided by proper instructions relative to the method of collecting the semen for analysis.

Following a period of three days' abstinence, the ejaculation is collected directly into a wide-mouth glass container and allowed to remain at room temperature or lower until delivered, within one or two hours, to the examiner. An active specimen will exhibit motility for thirty hours or longer under these conditions.

The spermatozoa in the semen may be compared to the populace of a large city, for in each there are young and immature individuals, aggressive and sluggish types, malformed members, and the old and dead. It is probable that the spermatozoa derive the nutrition for their activity from the abundance of dextrose that is found in the fresh specimen in from three to six times that present in an equal amount of blood.

A routine semen analysis should include the following details:

1. The average volume of the ejaculate is from 3 to 4 cc. Variations from one or two drops to 10 cc. are encountered. Specimens of less than 0.5 cc. in amount fail to produce an adequate seminal pool, which ordinarily provides a medium for the survival and protection of the sensitive sperm.

2. The appearance and viscosity of the fresh ejaculate is entirely different from that one-half hour old. Self liquefaction is then completed, much to the benefit of motility of the sperm. If the eventual motility is of a good grade it is likely that variations in viscosity have little or no clinical significance.

3. The  $p_H$  of a seminal specimen usually falls within the range of from 7.7 to 8.5. If no motility is found it is of particular importance to obtain a  $p_H$  determination, for in rare instances a shift to a low reading of 6.0 and 6.2 has been found to be associated with necro-spermia.

4. It is extremely difficult to give a word picture of the description of the motility of the spermatozoa. The type of activity, the number crossing a microscopic field and the percentage of inactive cells are all details of interest. Interval examinations are made to determine the viability of the sperm, which is usually about twenty-four hours at room temperature.

5. The number of spermatozoa is determined by the use of the usual equipment for counting blood cells. A sodium bicarbonate-phenol solution is used as the diluent; it destroys motility to permit an accurate estimation of the cells present in each cubic centimeter and in the total ejaculate. The average fertile male will produce from 100,000,000 to 150,000,000 sperma-

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tozoa per cubic centimeter or from 400,000,000 to 500,000,000 in the total ejaculate. One group of eminent authorities state that in their experience pregnancy does not occur if the cell count is below 60,000,000 per cubic centimeter. I have on record a few exceptions to this rule and believe the more reliable and consistent cell counts have been on the basis of cells present in the total volume of the ejaculate rather than in units of cubic centimeters. The bulk of the semen undoubtedly originates in the prostate and seminal vesicles, and variations in the amounts of these secretions will accordingly dilute or concentrate the specimen. In the former instances an apparent deficiency may be inferred if the cell count is expressed in cubic centimeters, whereas the number of sperm in the total ejaculate may prove to be normal. Here, as elsewhere, dogmatic rules are dangerous, and it is unlikely that any figure can be decided on as a fixed minimum. When fewer sperm are found, the chance of fertilization is mathematically and proportionately reduced until a theoretical point is reached at which impregnation is most unlikely. A simile may be found by comparison with the laws of chance as it affects a hunter shooting at a difficult target with a shotgun: his chances of hitting the object are enormously reduced if the shell is loaded with ten shot rather than with 125 of the same size and weight.

6. The examiner must be familiar with the variations in the morphology of the spermatozoa just as the hematologist is conversant with blood cytology. A stained smear is prepared and the percentage of atypical cells is established by count. If some of the more complicated stains are not available, the Gram stain gives a fair visualization of the cell structure after proper fixation. Moench<sup>1</sup> has evidence that leads him to believe that, if more than 20 per cent of the cells have abnormal form, sterility or miscarriage will result. In an incomplete but rather large group of cases of proved fertility now under study I have yet to find an instance of a normal pregnancy attributable to a seminal specimen with excessively large numbers of abnormal sperm, yet this condition is not infrequently encountered in cases of disturbed fertility. Veterinarians are familiar with this breeding defect in male animals and have means of offering proof of male faults that cannot be obtained in human studies.

The test of time leaves the future to determine the actual value of this important theory, as information is compiled to substantiate or refute the current principles of sperm morphology.

The following cases are herewith presented to illustrate principles in the method of diagnosis and management of certain defective husbands. All examinations, treatments and inseminations of the females were done by gynecologists in private practice or in the gynecology department of this hospital. Abstracts of the records of both husband and wife are included for the sake of completeness and clarity.

#### REPORT OF CASES

**CASE 1.—Husband.**—The chief complaint was that there was no ejaculate, and the marriage was barren.

For the duration of his two and one-half years of married life the patient had never produced an ejaculate, although he obtained erections and had coitus once or twice each week.

1. Moench, G. L.: Sperm Morphology and Biometrics, *M. Times & Long Island M. J.* 62: 33-35 (Feb.) 1934; Sperm Morphology and Microdissection, *Am. J. Obst. & Gynec.* 18: 53-56 (July) 1929; Sperm Morphology and Biometrics, *Am. J. Obst. & Gynec.* 25: 410-413 (March) 1933; Evaluation of Motility, *J. A. M. A.* 94: 478-480 (Feb. 15) 1930; Technique of Study of Cytology, *Am. J. Obst. & Gynec.* 19: 530-538 (April) 1930. Moench, G. L., and Holt, N.: Number of Spermatozoa and Fertility, *Urol. & Cutan. Rev.* 33: 814 (Dec.) 1929; Sperm Morphology, *Am. J. Obst. & Gynec.* 22: 199-210 (Aug.) 1931.

He appeared eight years younger than his actual age of 23 years. There was no beard, and the body hair was absent except for the pubic region, where it had a typical feminine distribution. The external genitalia were of the size and development of a 10 year old boy and the prostate was palpated with difficulty. Massage failed to produce any secretion from the gland.

Roentgenograms of the skull and routine laboratory tests were negative except for the sugar tolerance tests, which demonstrated a small elevation and rapid fall to the blood fasting level. Repeated efforts to produce a small amount of semen were without success.

**Wife.**—The wife was essentially normal (gynecologic report).

**Treatment.**—The husband received 200 units of the gonadotropic factor from pregnancy urine, daily for five weeks. At the end of that time his ejaculate consisted of one drop of semen containing from six to eight normal spermatozoa per high power field. For the subsequent thirteen weeks gonadotropic substance (200 units) intramuscularly was alternated daily with 20 units of solution of anterior pituitary. At the end of eighteen weeks about two drops of semen could be produced, containing from 100 to 200 spermatozoa per high power field, and a definite increase in the libido was reported. This type of therapy was continued with the addition of weekly prostatic massage and in eight months from the beginning of the treatment the ejaculate measured 0.2 cc. and possessed numerous highly motile spermatozoa. At the end of fourteen months the following semen analysis was made: volume 0.75 cc., viscosity and turbidity above normal, motility excellent, vitality twenty hours; count per cubic centimeter 76,000,000, total for ejaculate 57,000,000.

**Morphology:** A stained specimen revealed normal cell formation.

**Result.**—The wife became pregnant seventeen months after the inception of therapy and was delivered of a normal female child.

In my experience this favorable result has been decidedly unusual. In a number of similar cases the same treatment was administered without results. It would appear, however, that long periods of endocrine therapy may be necessary if results are to be anticipated. Predictions are hazardous and the actual mechanism of the gonadotropic action of these products still remains purely theoretical. No change in the patient's appearance or body structure was apparent at the end of the treatment.

**CASE 2.—Husband.**—The husband, aged 35, was apparently healthy and well developed. His sexual ability and habits had been normal during the five years of married life, yet there had been no signs of pregnancy.

The entire physical examination failed to disclose anything of importance except a boggy prostate gland containing a few pus cells.

The laboratory data were essentially negative but the semen analysis disclosed the following: volume 1.75 cc., *fu* 8.0; motility: one hour poor grade (from 10 to 15 cells motile per high power field), eight hours sluggish, ten hours very slight motility; cell count per cubic centimeter 18,000,000, total for ejaculate 31,200,000 (low); morphology: large numbers of spermatocytes and immature forms; 28 per cent of adult cells were of abnormal morphology. A diagnosis of a defective seminal specimen was made on the basis of poor motility, low count and abnormal cell structure.

**Wife.**—A thorough examination by a gynecologist revealed nothing abnormal except for a slightly hypoplastic cervix not sufficient to explain the infertility.

**Treatment and Course.**—The husband was treated as in the previous case, with the inclusion of thyroid substance by mouth and a high vitamin diet. At the end of twelve months he had gained 12 pounds (5.4 Kg.), yet no material change in the semen was noted except for increased motility and vitality.

At the end of fifteen months the estrus period was studied by the vaginal smear method (Papanicolaou-Shorr) and five artificial inseminations were attempted with the husband's semen at various times in the probable ovulatory phase during

the ensuing five months. No results followed. At the request of both husband and wife, foreign semen (an excellent specimen) was used for the insemination. Pregnancy occurred after the third attempt. A normal birth duly followed.

This case is presented to illustrate the necessity of a detailed semen analysis to detect male deficiency. Although numerous spermatozoa were produced, the husband was "sterile" to his wife. Artificial inseminations with defective specimens do not correct the cause of the barrenness and are most apt to be useless. Therapeutic measures failed in this instance to alter the character of the semen.

**CASE 3.—Husband.**—The husband, aged 35, was deformed and somewhat obese, with an arthrodesis of the right hip due to tuberculosis of the joint in childhood. For the nine years of married life there had been no signs of pregnancy. The semen had been analyzed on several occasions and reported to be satisfactory, but no physical examinations had been done for the problem of infertility.

On examination the meatus was found located proximal to the glans, opening on the ventral surface of the shaft of the penis. A diagnosis of hypospadias was made. The other examinations revealed no unusual disorders and the semen was found to be satisfactory, as evidenced by the accompanying report: volume 3.75 cc., appearance and viscosity normal,  $pH$  8.1; motility: two hours excellent, six hours very good, twelve hours good, twenty-four hours slight; morphology, 93 per cent normal oval type; count per cubic centimeter 128,000,000, total for specimen 416,000,000.

**Wife.**—Gynecologic examination disclosed a myoma of the uterus. This was removed and six weeks thereafter the pelvic organs were normal to palpation and roentgenologic examination.

**Course.**—No pregnancy occurred during the following seven months from the date of full recovery from the operation. The ovulation period was studied by the vaginal smear method (Papanicolaou-Shorr), and artificial inseminations were done with the husband's semen. Pregnancy occurred after the third month of these procedures.

The husband believed that he was totally without fault by virtue of the favorable semen analysis performed two years before this study was begun. It is possible and probable that the hypospadias interfered with the proper deposition of semen. This case of "marital sterility" is presented to demonstrate in particular a combination of faults in the two partners and to emphasize the importance of complete investigation of both husband and wife.

**CASE 4.—Husband.**—The husband had contracted gonorrhea fifteen years before and suffered from a bilateral epididymitis. All traces of this infection had disappeared but his seven years of married life had been without offspring. At the age of 37 he was in the best of health and, with the exception of slight induration of both epididymides, was found to be normal.

Repeated examinations of his ejaculate showed the complete absence of spermatozoa, and a diagnosis of bilateral blockage of the epididymides was made.

**Wife.**—The wife was found to be entirely without fault and no cause for the infertility could be assigned to her.

**Treatment.**—A bilateral vaso-epididymal anastomosis was done and many spermatozoa were recovered from aspiration of the globus major of each epididymis.

During the six weeks postoperative period the ejaculate contained a few sluggish spermatozoa, but these disappeared when subsequent specimens were observed until they were again present in the specimen at the end of five months. At that time the following specimen was obtained: volume 4.5 cc.,  $pH$  8.0, viscosity normal; motility: one hour excellent, six hours very good, twelve hours good, twenty-four hours, from 10 to 15 cells motile per high power field; count per cubic centimeter 101,000,000, total for ejaculate 452,000,000; morphology: a stained slide demonstrated normal cell structures.

**Course.**—The wife became pregnant eight and one-half months after the date of operation.

This presents again the fact that occlusion of the vas does not destroy the spermatogenesis of the affected testicle. The results of such an operation may not be apparent for several months and repeated studies of the semen are advisable even if spermatozoa may not appear for a long period after the anastomosis has been attempted.

#### SUMMARY

A competent investigation of marital infertility must include a careful examination of both partners. The relative fertility of both husband and wife must be established to determine the grade of fertility of the marriage. Wide variations exist in the fertility of men as determined by semen analyses.

The semen constitutes the chief index of male fertility. The proper evaluation of its fertilizing power is dependent on the complete analysis of the various factors and constituents of the specimen.

Male defects may be eradicated or improved in certain instances. Caution is advisable in anticipating or predicting results from the administration of endocrine products. These may be striking in some instances and yet entirely lacking in other apparently similar cases.<sup>2</sup>

501 Madison Avenue.

## THE OPERATIVE TREATMENT OF STERILITY IN THE MALE

FRANCIS R. HAGNER, M.D.

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WASHINGTON, D. C.

The most frequent cause of sterility in the male is inflammatory occlusion of the epididymis or vas deferens. It is solely to this cause and its treatment that I shall limit my discussion in the present paper.

Atrophy of the testicle very rarely occurs in epididymitis, especially in the type associated with gonorrhea. I say this from my experience in the operative treatment of gonorrheal epididymitis, as in more than 300 cases I have never found evidence of involvement of the testicle itself, the epididymis and tunica vaginalis seeming to bear the brunt of this infection.

Traumatic epididymitis rarely leads to sterility. I have recently had a patient who had an injury ten years ago, apparently not very severe, to both testes. He was examined by a doctor in another city. In the examination, eight months before I saw the patient, a needle was inserted into the epididymis, and it is said that live spermatozoa were obtained. At the operation the globus major on each side was found to be very dark and on incision appeared as an organized blood clot. On one side there was a very small abscess, but no spermatozoa were found, although the vas was patent. It was useless to make an anastomosis, and therefore none was made.

From my experience in this case I should rather deprecate the exploring of the epididymis with a needle. In none of my successful cases was this done.

In bilateral gonorrheal epididymitis the healing process leads to the formation of scar tissue, which causes an occlusion of the efferent ducts of the epididymis,

2. Special acknowledgment is made to Dr. Ephraim Shorr, Department of Medicine, New York Hospital, for his kindness in the care and management of those patients, whom he examined and treated in his department of endocrinology.

Read before the Section on Urology at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 15, 1936.

and this prevents the egress of the normal spermatozoa, which are formed by the unaffected testes. The globus minor is the portion of the epididymis most involved. It is in this very portion that occlusion has the most dangerous results, as there is here but one efferent duct,

while in the globus major the efferent ducts are numerous and the obstruction of one or two would still leave open other channels.

It was because of the known patulence of the globus major following gonorrheal epididymitis, when the globus minor and the vas deferens in this region became occluded, that the anastomosis of the

vas deferens and the globus major was made by Dr. Edward Martin of Philadelphia, who was a pioneer in this field. The endeavor to overcome the occlusion by such an operation offers the only chance of recovery.

I have never had a successful case following operation for sterility in which the patient has not had a history of bilateral epididymitis. There are two conditions that must be present for a successful result in sterility of this type: first, the vas must be patulous

some cases in which occlusion was present. The globus major in a favorable case is, as a rule, easily palpable and has a rather full feeling on palpation. If the globus major is not palpable it may be entirely obliterated by fibrous tissue, with the ducts occluded and no spermatozoa discoverable.

As stated in previous papers, I have had no successful cases except those in which silver wire was used as a suture. I had one case in which I used very fine silk at the first operation, but it resulted in a failure. This patient was subsequently reoperated on, and the silver wire was used, with a cure resulting. I cannot explain this circumstance, but it is my impression that there is less tissue reaction from silver wire than from any other type of suture. I feel that I have proved this conclusion by experimentation on animals.

In some of my patients on whom I have reoperated after an initial failure, the silver wire sutures had the



Fig. 1.—The beading of the cord which is often present when the lumen is occluded. On incision a thick yellow material escapes.

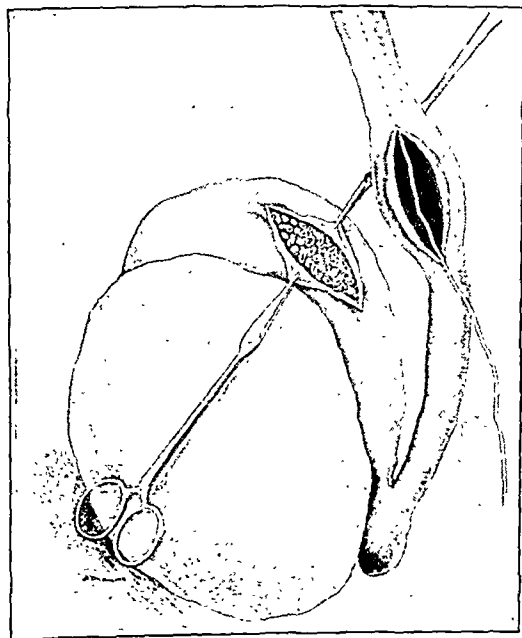


Fig. 2.—The vas opened and silk worm gut passed up the lumen. Incision into the globus major and the tubules cut across.

above the point of the anastomosis; second, the globus major, or the upper portion of the body of the epididymis, must contain live spermatozoa. If these conditions are not present it is futile to expect a cure from the operation.

I have been able by careful palpation of the vas, on noting a beaded condition, to make a prognosis of occlusion preoperatively in a number of cases. I have at times failed to make this preoperative diagnosis in

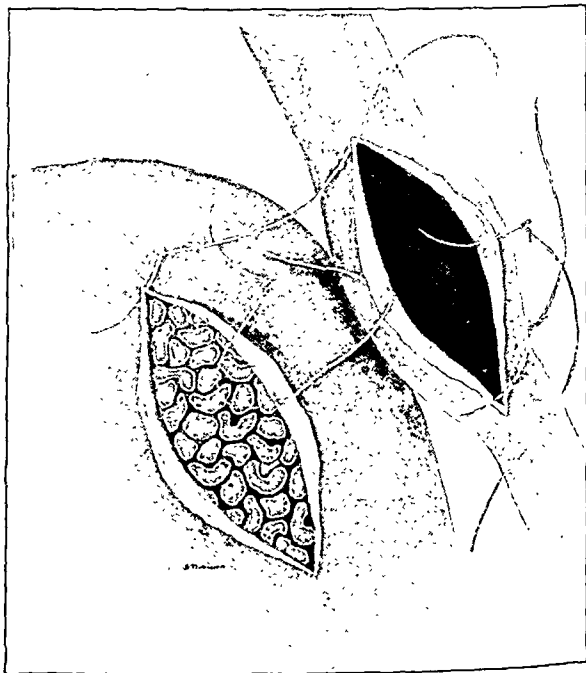


Fig. 3.—The placing of the fine silver wire sutures to complete the anastomosis.

same appearance as at the time they were inserted, twelve or more months before, with very slight formation of fibrous tissue.

I shall only briefly mention the steps of the operation, as these have been reported so many times that I think repetition is unnecessary. It is an interesting fact that I have not had a single case of impotence in any of the patients who were sterile.

I have had four atypical cases, three in which the vas was occluded on the side in which the epididymis had live spermatozoa, whereas on the opposite side no spermatozoa were found though the vas was patulous. A crossed anastomosis was done; that is, the patulous vas was brought through the septum of the scrotum and anastomosed to the epididymis that contained the live spermatozoa. Unfortunately these cases failed of cure. The fourth was more successful. A doctor from North Carolina presented himself, and at the time of operation I found an occluded vas on the left side and a scarred globus major with no spermatozoa. On the right side the globus major was replaced by a moderate-

sized spermatocele that contained actively motile spermatozoa. An anastomosis was made between the vas and the spermatocele. In six weeks this patient had actively motile spermatozoa, and his wife became pregnant within two months and was subsequently delivered of a normal child.

Every urologist knows that, when operating on a spermatocele, he is liable to a recurrence unless he removes every part of the sac (which means the removal of the small duct that leads into the cyst). I assume that the same condition obtains in individuals in whom a cure is procured; namely, that a sinus is formed between the incised vas and one or more tubules in the epididymis that act in the same way as the duct that leads to a spermatocele.

A failure at one time, if live spermatozoa are present and if the vas is patulous, is not a contraindication to a second operation. In some of my most successful results I have had a failure the first time, with a favor-

not to make the incision in the vas too high up, thus giving a double chance for a cure and, in case of failure the first time, allowing for a subsequent operation.

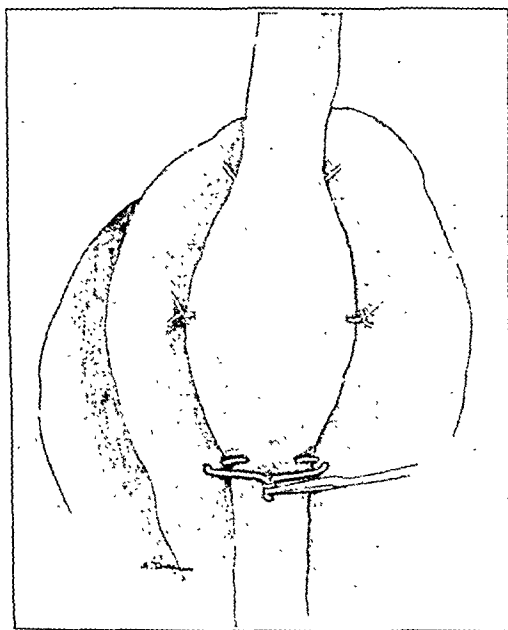


Fig. 4.—The anastomosis completed. The silver wire sutures are drawn up and twisted.

able outcome at the second operation. The time of the appearance of the spermatozoa varies. I have had individuals who have produced actively motile spermatozoa one month after operation and others varying from one month to nearly a year. I do not reoperate under one year, as I have had successes that did not manifest themselves until eight or ten months after operation. In one case the first evidence of a cure that the patient noted was his wife's pregnancy. He was in an unhappy frame of mind until we found that he had thousands of spermatozoa.

Before operation, repeated examinations for spermatozoa have been made either by myself or by the surgeon referring the patient. Some patients have been sent to me as sterile who were found not to be so. It is most important to examine an ejaculated specimen of semen and not rely on that obtained by massage of the prostate and seminal vesicles.

It is important to control all bleeding either by torsion or by pressure before the anastomosis is made. I have always done a bilateral operation, being careful

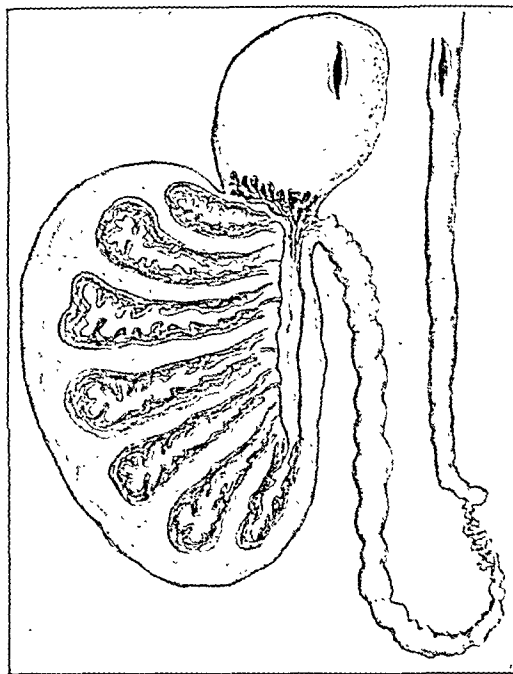


Fig. 5.—First step in anastomosing the vas deferens with a spermatocele.

In the sixty-five cases here reported there were seventy-seven operations. Twelve patients were reoperated on because of initial failure. Of these twelve, seven were cured by the second operation.

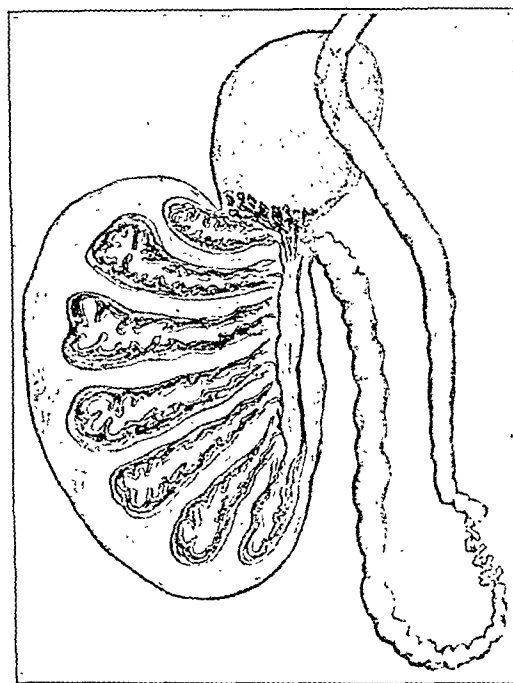


Fig. 6.—Completed operation.

Nearly all my operations have been done by lateral anastomosis except the few rather atypical ones already mentioned. Sometimes one finds occlusion of the vas at the first incision, and by going farther up the vas one is able to get above this obstruction. Unless great

care is exercised to cut only into the lumen of the vas, which is recognizable by the yellowish tinge of its lining, there is likelihood of the operator carrying the incision through the entire diameter of the tube. It is important not to strip the vas deferens too close. I place the first suture at the distal end of the incision in the vas, taking a good heavy bite, as this is the anchoring suture for the operation and the obstruction is below this point. The suture is then anchored firmly in the lower end of the elliptic incision of the epididymis. Two lateral sutures are then placed to take a fairly heavy bite in the epididymis and include some of the cut tubules. If only the fibrous covering of the

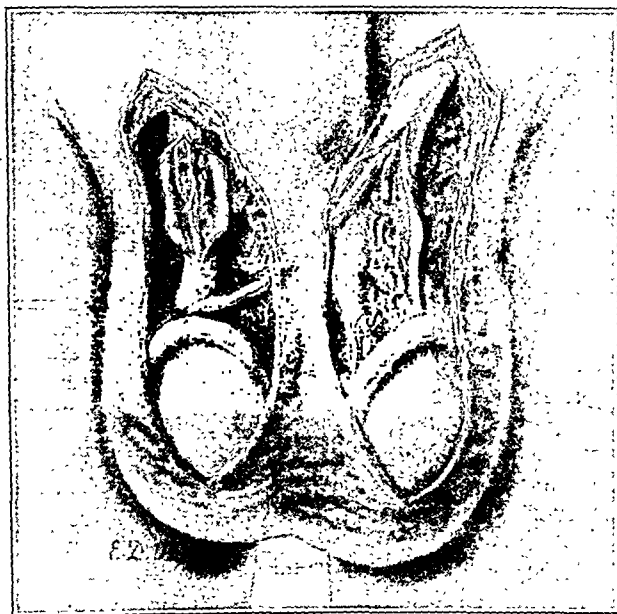


Fig. 7.—Anastomosis of the vas through the septum of the scrotum to the opposite side.

epididymis is taken up in the suture, the cut tubules drop back when the anastomosis is made. The suture is then passed through the cut edges of the vas, just enough tissue being taken to approximate the edges. The last suture is passed in the same way through the upper end of the incision in the epididymis. It is then

#### *Results in Operative Treatment of Sterility in the Male: Sixty-Five Cases*

Number of patients operated on.....	65
Repeated examination showed no spermatozoa.....	
Cases impossible of cure.....	30
Due to occlusion of vas deferens or absence of spermatozoa in the epididymis.....	
Too early to report result.....	1
One result unobtainable.....	Total 2
Favorable cases.....	33
Patulous vas deferens and motile spermatozoa found in the epididymis.....	
Cures (63.6 per cent).....	21
All presented numerous motile spermatozoa; 16 of the 21 begat one to six children, although one was a miscarriage	

passed through the vas, at the upper angle of the incision, being carefully placed so as not to occlude the lumen. I test this out with a tear duct probe. The anastomosis is then complete. The instruments that I use are iridectomy knives, scissors and artery forceps such as those commonly used in operations on the eye.

The operation, while tedious, is not dangerous to life. I have always used general anesthesia. I have felt that

in order to avoid the formation of scar tissue no local infiltration should be used. The operation cannot compromise the function of an organ that has already proved functionless. In no class of cures will the surgeon be rewarded by his patients with a greater warmth of gratitude.

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#### ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. MEAKER, HOTCHKISS AND HAGNER

DR. VICTOR D. LESPINASSE, Chicago: Dr. Meaker pointed out that an examination as to the etiologic diagnosis of sterility includes a complete physical examination: the state of body and the state of mind. With regard to pathologic secretions it is rather curious that pus in prostatovesicular infections sometimes is deadly to the life of the sperm and at times is not. The Huhner test, as Dr. Meaker brought out, is a valuable procedure; it determines the reaction of the spermatozoa to their normal, natural environment. A point of considerable importance in the male is the size of the prostate. If a young man, 25, 30, 35, has a soft, succulent prostate, I feel that he is a pretty good man from a sex standpoint. When semen is first ejaculated it is quite thick, quite viscid if it is a normal specimen. Some specimens never coagulate; they are thin and watery from the start and in my experience are poor specimens. The evaluation of sperm is not permanent; it is not like blood groups. The sperm is a very good index as to the general bodily condition. If one has a good live sperm it is very likely that the bodily condition is excellent. It is surprising what a normal spermatozoon can do. It can travel all around the country and still impregnate. I did some experimental work once wherein I rigged up a doe's reproductive system so that the sperm had to go up the right side, across the abdomen and come down into the left uterus to impregnate, and they did. Granted that there are no sperm in the semen, the condition is due either to obstruction or to lack of production. I regard testicular or epididymal puncture a very poor procedure. In obstructive sterility it is always a question as to where the obstruction is, and one presumes that it is where the palpable infiltration is; but the real obstruction may be in the vas. The infiltration is usually greatest in amount, as Dr. Hagner has mentioned, in the globus minor, but one should feel the vas. In these cases of obstruction the testicular tension is a little higher than normal and there is oftentimes a small hydrocele with adhesions.

DR. LAWRENCE R. WHARTON, Baltimore: A great many women conceive who have a minor obstruction of the fallopian tube that can be overcome by the pressure of gas, by the Rubin test. On the other hand, I think Dr. Meaker will probably agree with me that, if the lumen of the tube has been obliterated and the walls have been sealed by inflammation, the situation is bad. Endocrinology is one of the most difficult problems to measure, because in this domain there is no uniformly accepted standard, no yardstick by which the patient can be measured. Young women may have metabolic disturbances which are temporary and which do not interfere with subsequent normal conception. Of course, very few are completely normal, and there are many women who have slight endocrine disturbances, who are slightly over weight, who have a slightly changed metabolic rate, and they are normally fertile. It is difficult to measure these cases by a standard rule. In the last ten years the progress in this domain has been immense, and in the same measure in which progress has been made, I think further progress will be made by the careful work of men in laboratories, in clinics and in offices. There is one feature of sterility in women which has not received much attention. I refer to phenomena concerning ovulation. Ovulation is just as important as spermatogenesis. We see the sperm cells, we know whether they are healthy, we know whether they are being formed in normal proportions, but we don't see the ova, we don't know whether they are healthy, we don't know whether in some cases they are even being formed or not. This problem has been studied rather actively in the last year. There are certain definite features that accompany ovulation in many women. These women have a slight mucoid discharge at that time; many women have a slight micro-

scopic trace of blood in the cervical secretion, and that can be determined by vaginal washings. Vaginal secretions change. Endometrial biopsies sometimes tell whether or not ovulation is proceeding. Some women even have a little discomfort at the time of ovulation, nausea, at times a little pain between the menstrual periods. One cannot be certain, however, for some women have all these signs and are not ovulating. Two Frenchmen, Simonnet and Seguy, have made a similar observation. This is a domain in sterility which has not been studied as I hope it will be. The problem of sterility has so many ramifications that one cannot touch them all. But the problem of sterility is not being handled as it was a few years ago. It is not the money making proposition, perhaps, that some other forms of surgery are. There is nothing spectacular about it. It takes a lot of hard work and is done usually by those who are deeply interested in it.

DR. MILEY B. WESSON, San Francisco: I want to express my appreciation to Dr. Hagner for this presentation and for his original paper on the subject read in Philadelphia six years ago. Those who learned their surgical technic from the late William S. Halsted of Johns Hopkins Hospital know that silver wire is the suture of choice in all cases in which round cell infiltration about the stitches will vitiate the end results. Most surgeons have apparently forgotten his teachings. Dr. Hagner not only has profited by the precepts of his mentor but has called it to my attention on two occasions. The Hagner operation is a success because of the use of silver wire sutures. I have seen silver wire removed from the sites of herniotomies many years after they have been placed, and they were as bright and shiny as when introduced.

•DR. J. H. TURNER, Houston, Texas: I have seen, in operating for acute bilateral epididymitis, cases in which both epididymides have been completely sectioned and a drain put in, and afterward these patients were fertile. On several occasions in our clinic we have purposely sectioned the epididymis and tied in a silkworm-gut drain for several days, allowing the patent ends of the tubules of the epididymis to unite. The operation for surgical treatment of the epididymis has previously been described by my brother, B. W. Turner. He also described the technic of excision of a nodule of the vas and the anastomosis. In cases in which the obstruction is above the inguinal ring we have been able to establish communication by passing a long silkworm-gut drain through the vas and afterward injecting some physiologic solution of sodium chloride, an insufflation of the vas, so to speak.

DR. SAMUEL R. MEAKER, Boston: My associates and I believe that one year of involuntary sterility justifies the carrying out of a complete diagnostic study. A year or two of delay in young patients would make little difference; but I feel strongly that when a woman is over 30 no time should be lost, because the definite peak of female fertility arrives some time in the midtwenties. From 30 on there is a steady diminution, so that delay in investigating these patients when the wife is on the down grade of fertility inevitably lessens the chance of successful results. I am glad that Dr. Lespinasse emphasized the item of diet, which I mentioned briefly. The ordinary mixed human diet contains all the vitamins needed, and more, including vitamin E. The fact that one can render laboratory animals infertile by putting them on artificial mixtures of foods lacking in various elements proves remarkably little with regard to human beings. In general one should be cautious about transferring conclusions based on the fertility of laboratory animals, maintained as they are under artificial conditions, to clinical human cases. My associates and I believe that the most important factor in the diet is protein insufficiency or protein starvation. In many of our patients, particularly male patients, in whom the semen gives a quantitative measure, whose protein intake is inadequate, the correction of that fault has brought about an objectively demonstrable improvement and not rarely a cure of sterility. Another point mentioned by Dr. Lespinasse is well taken; namely, that the seminal production, far from being constant, varies from time to time. I have repeatedly noticed great variations in the quality of seminal specimens, either for better or for worse, over a short period of months. These can usually be correlated with the constitutional state of the individual. I agree with Dr. Wharton that we are far indeed from having arrived at the desirable degree of technical

perfection in dealing with tubal occlusions. In fact, we are so far from it that I myself am extremely disinclined to operate on any type of tubal blockade other than simple occlusions at the fimbriated ends.

DR. FRANCIS R. HAGNER, Washington, D. C.: Some of these semen donors write, speaking highly of themselves and their personal appearance. One thing that I failed to mention is that when the tubules of the epididymis are cut across to obtain the specimen to note the presence of motile spermatozoa, sometimes when it is put on a warm slide the spermatozoa are not motile. If a little warm physiologic solution of sodium chloride is run on the slide, active motility will be noted. Dr. Lespinasse spoke of the absence of the vas deferens. I had a case last year in which there was complete absence. I presented my case before the Congress of Surgeons and was going to do a vaso-epididymostomy. When I got in there I could not find the vas. I have also felt that leaving a drain would rather tend to the formation of scar tissue, and I have never done that because I think that in these operations it is desirable to obviate the presence of scar tissue as much as possible. An attempt is made to stop hemorrhage by pressure with small artery forceps. I would like to say a word about the epididymotomy operation. When I reported these cases many years ago I distinctly impressed the importance of not cutting the epididymis but to do multiple punctures and then pass a probe in and work it back and forth to evacuate the pus. I believe that in a good many of those cases if a wide incision is made there is much more liability to have sterility following such a procedure. Dr. Cunningham and I have had about the same relative number of cases in which a bilateral epididymotomy was done, and the incidence of sterility in those cases is about 40 per cent, which is about the same as in those in which operation is not performed.

## ENDOCRINE FACTORS IN STERILITY

RICHARD CHUTE, M.D.

BOSTON

Among the causes of deep unhappiness in marriage, sterility ranks high and has always done so from the beginning of history. A home without children lacks the stability of a home organized on a normal biologic and family basis with children. In a childless marriage, husband and wife are not held together by that strong common bond which leads parents to subordinate their own selfish desires gladly for the common welfare of their family.

The prevalence of sterility and thus its magnitude as a problem is indicated by the fact that, according to recognized authorities,<sup>1</sup> somewhat more than 10 per cent of all marriages in the United States and England are sterile, and Meaker<sup>2</sup> estimates that there are two million childless couples in the United States who are still in the child-bearing age.

Sterility varies from that which is complete and absolute to that which is only relative or partial and which is amenable to improvement by treatment. In many matings the fertility factor is not fixed but rises or falls according to various conditions. Furthermore, a sterile mating may result from the union of two persons of rather low fertility, but each of these persons may be fertile when remarried to a new partner of high fertility. Thus sterility is frequently not the fault of one partner only but is often due to the sum total of several minor faults in both partners, each of which taken by itself might not amount to much, but

Read before the Section on Urology at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 15, 1936.

1. Reynolds, Edward, and Macomber, Donald: Fertility and Sterility in Human Marriages, Philadelphia, W. B. Saunders Company, 1924.

2. Meaker, S. R.: Human Sterility, Baltimore, Williams & Wilkins Company, 1934.

all of which added together cause the couple to be sterile. The secret of successful treatment lies in finding and correcting these faults.

For the purposes of this symposium on sterility I shall limit myself to a discussion of only the endocrine factors in sterility. Recent developments have been so enormous and rapid in the field of endocrine action in relation to human reproduction that to give a complete review of this very complicated subject, especially in a short paper such as this, is absolutely impossible. Furthermore, many points are as yet extremely puzzling and confusing, and therefore I shall have to limit myself to giving a brief general outline of some of the major features that seem to have been pretty well established.

Given a nonfertile mating in which thorough examination of both partners reveals no structural reason for sterility, there arises the question of an endocrine cause. It is well known that endocrine disturbance is a frequent cause of sterility. The late Allan Rowe over a period of many years studied about 4,000 patients from the endocrine point of view, and he and Lawrence<sup>3</sup> found definitely more sterility in the endocrinopathic patients than in the nonendocrinopathic patients and felt that a history of sterility suggested the possibility of an endocrine disturbance. Meaker<sup>2</sup> found that about 57 per cent of all his sterility patients showed some evidence of endocrine disturbance.

Although sterility occurs in such extreme endocrine abnormalities as gigantism, acromegaly, pituitary dwarfism, Simmonds' disease (pituitary cachexia), cretinism, Addison's disease and tumors of the adrenal cortex, I shall not discuss such cases, because in the great majority of them fertility is not their chief concern and also because such cases are so extreme that the diagnosis of some major endocrine disaster is obvious. I shall limit my discussion to the somewhat less striking type of endocrinopathy, in which the patient is apt to come to the urologist's office first complaining of sterility.

It is becoming increasingly apparent that the anterior pituitary is the most important and dominant member of all the endocrines—the master gland, so to speak—and that it influences and controls their actions, although it is reciprocally affected by them.

Although it is probable that insufficiency of the anterior pituitary during adolescence is responsible for most of the disorders of the other endocrine glands leading to sterility, in many adult patients, seen by the physician, complaining of sterility in marriage, the abnormal pituitary action is over, leaving some secondary result presenting—for example, hypoplastic ovaries—as the chief obvious endocrine fault at the time of examination.

Clinically there are three glands, disorders of which are mainly responsible for most endocrine sterilities—the anterior pituitary most frequently, the ovary and the thyroid—and it is with these three that I shall deal.

The anterior pituitary, the "master gland," controls the other endocrine glands and in both sexes influences the gonads, which operate under its control. The gonads have a double function: first, the production of essential germ cells and, second, the production of hormones or internal secretions that control the accessory reproductive organs and characteristics. The anterior pituitary stimulates each of the two functions of the gonads in the two sexes with a separate hormone. The follicle

stimulating gonadotropic hormone of the anterior pituitary stimulates predominantly the germ cell line and thus stimulates ovarian follicle formation in the female and spermatogenesis in the male. The second gonadotropic hormone is the luteinizing hormone, which stimulates the theca cells of the ovaries to luteinization and the interstitial cells of the testis. Therefore it is not surprising that removal or destruction of the anterior pituitary results in degeneration of ovaries and testes and in failure to produce germ cells or hormones.

As a result of the action of these two hormones on the ovary, two ovarian hormones are produced. The follicle-stimulating hormone brings about follicle formation, which produces the ovarian hormone estrogen, and the luteinizing hormone causes luteinization with formation of the ovarian hormone progesterin. Thus in the pituitary-ovarian relationship there are two pituitary hormones and two ovarian hormones, the presence or absence of which can be determined by biologic tests.

When it comes to the testis it is known that the anterior pituitary hormones stimulate the testis to the production of at least one testicular hormone. At present there is a great question as to whether two testis hormones are produced just as in the case of the ovary. There is some evidence in favor of a second testicular hormone, but the question is not yet settled and the entire testis hormone situation is not so clear as that of the ovarian hormones.

It has been found that in both sexes the injection of gonad hormones not only does not stimulate the gonads which produce them but is even injurious to them. This is an important therapeutic point and is in accordance with the principle that no endocrine gland is stimulated by products which it itself produces—a most important fundamental principle. There is a reciprocal interaction between the gonads and the anterior pituitary, so that an increase in gonad hormone decreases the gonad-stimulating activity of the pituitary and, vice versa, a decrease in gonad hormone is accompanied by an increase in the gonad-stimulating power of the pituitary. Thus the deleterious effect of the injection of gonad hormones on the gonads themselves has been interpreted as being due to inhibition of the pituitary hormones necessary for the normal maintenance of the gonads.

Therefore, the administration of estrogenic substance or the active principle of the testis is not only not beneficial but is injurious to the ovaries or testes themselves and is contraindicated in cases of sterility. The only exception to this rule is in cases of habitual abortion, which is, so far as the end result goes, a cause of sterility. On account of animal experiments which showed that removal of the corpus luteum caused abortion, the hormone of the corpus luteum, progesterin, has been used<sup>4</sup> with some success in cases of threatened and habitual abortion, on the basis that they might be due to a deficiency of natural progesterin.

The relationship between the anterior pituitary and the gonads is such that, while proper function of the gonads may be prevented by inadequate secretion of the pituitary hormones, in some cases these hormones may be produced in normal amounts, but the defective gonads fail to respond to them. One can thus speak of primary hypogonadism in cases in which tests show

<sup>3</sup> Moore, C. R.: Hormones in Relation to Reproduction, *Am. J. Obst. & Gynec.* 29:1 (Jan.) 1935.  
<sup>4</sup> Krohn, Leon; Falls, F. H., and Lackner, J. E.: On the Use of the Lutein Hormone, Progesterin, in Threatened and Habitual Abortion, *Am. J. Obst. & Gynec.* 29:198 (Feb.) 1935.

<sup>2</sup> Lawrence, C. H., and Rowe, A. W.: Studies of the Endocrine Glands, *Endocrinology* 13:108 (July-Aug.) 1929.

plenty of gonadotropic hormones present but the gonads themselves are at fault, and of secondary hypogonadism which is due to defective production of hormones by the pituitary.

Therefore, from a therapeutic point of view the gonads in secondary hypogonadism, proved by biologic hormone tests, are best activated by pituitary gonad-stimulating hormones and not by gonad hormones.

Biologic hormone tests, of which the Aschheim-Zondek pregnancy test is a good example, represent a great advance in diagnosis in cases of sterility. At the present time by means of injections into rodents or monkeys of extracts from blood<sup>6</sup> or urine<sup>7</sup> and by endometrial biopsy<sup>8</sup> one can arrive at a pretty accurate estimation of the four hormones in women, the follicle-stimulating and the luteinizing hormones of the anterior pituitary and the two ovarian hormones, estrogen and progesterin. This is a very important advance indeed, because it allows one to find out rather accurately the exact endocrine situation. Many cases that clinically appear alike are really very different endocrinologically and, in the absence of determining clinical signs, hormone tests are the only way of distinguishing. For example, between an amenorrhea due primarily to ovarian deficiency and one in which the amenorrhea is due primarily to failure of the pituitary to stimulate the ovary. The testis hormone in males can probably be best demonstrated by the effect on the comb growth of capons and also by the effect on the accessory genitalia of rodents.

In dealing with sterility of probable endocrine origin it is very important to find out which gland of internal secretion is primarily responsible in order to give intelligent treatment. This must be accomplished by a combination of clinical and laboratory observations, since either alone might lead one astray; for example, both thyroid deficiency and pituitary deficiency may result in obesity.

As I mentioned before, of the three glands hypofunction of which is responsible for most of the endocrine sterilities, much the commonest is anterior pituitary hypofunction, which may be either functional or due to pathologic damage. Coincidentally with this there may be hypofunction of the posterior lobe giving rise to bilobar failure of the pituitary, or there may be normal or increased function of the posterior lobe causing pituitary dysfunction. Probably the commonest pituitary type encountered clinically is a mild Fröhlich's adiposogenital dystrophy. Another pituitary cause of sterility in both sexes is the pituitary basophilism-adrenal cortex syndrome, the pathogenesis of which is not yet clear. It appears possible that it is the basophil cells of the anterior lobe which may produce the gonadotropic hormones.

In cases of hypofunction of the anterior pituitary, the signs and symptoms may differ according to whether bilobar failure or pituitary dysfunction is present, but there is a basic pattern to which all variations are apt to conform in a general way. Evidence of genital and ovarian hypoplasia is present. There is usually the history of the delayed appearance of puberty and later, in women, increasing intervals between periods with

constantly less menstrual flow, progressing to amenorrhea. Some patients show extremes of stature, being either very tall or very short. Obesity, especially of the so-called girdle type, is very common. The hair may be scanty or may show a heavy overgrowth. The visual fields are apt to be disturbed. Laboratory examination is apt to disclose a moderately lowered basal metabolic rate. Tests show increased sugar tolerance in bilobar failure but a decreased sugar tolerance in pituitary dysfunction if the posterior lobe is hyperactive. The blood uric acid is raised. The specific dynamic action of protein is lowered, according to Goldzieher and Gordon.<sup>9</sup> Biologic tests show the absence of anterior pituitary gonadotropic hormones.

As causes of sterility secondary in importance to the anterior pituitary and yet potent factors come primary hypofunction or dysfunction of the ovaries, and hypothyroidism.

In sterility that is due to inherent faulty function of the ovaries themselves quite independent of any secondary effects from any other gland such as pituitary or thyroid, there is often the history of easy fatigability and headache, and usually great nervous instability. There is no characteristic habitus, but the genitalia are apt to be hypoplastic. Menstruation is sometimes normal but more often irregular and scanty, and dysmenorrhea is common. The biologic hormone tests show absence of ovarian hormones but increased anterior pituitary gonadotropic hormone, probably the result of compensatory hyperactivity of the pituitary in an effort to stimulate the sluggish ovary.

Another ovarian cause of sterility is the condition of anovulatory menstruation, of which there has been considerable mention made recently. This has been described by Novak<sup>8</sup> as follows: Just after menstruation the graafian ovarian follicle begins to mature and produce increasing amounts of estrogenic substance in the normal manner. However, for some reason it does not rupture but keeps on beyond the stage of usual maturity, until the ovum dies, the granulosa degenerates, production of estrogenic substance ceases and finally, after an interval, bleeding occurs. Thus there is produced a periodic bleeding which looks like normal menstrual bleeding but in which the patient is sterile because there are no ova. The diagnosis can be made by microscopic examination of the endometrium obtained by a biopsy curet shortly before an expected flow. In the normal woman there is at that time present in the ovary a functioning corpus luteum producing progesterin and bringing about the characteristic secretory phase of the endometrium. If, however, the endometrium shows only proliferative endometrium, with no evidence of secretion, it can be concluded that there is an absence of progesterin because of the absence of a functioning corpus luteum in the ovary and that therefore ovulation has not occurred.

In sterility due to hypothyroidism there is general sluggishness of the whole organism with a tendency to overweight. Hair is scanty and there is a tendency to skin diseases and constipation. The basal metabolic rate is depressed, the blood cholesterol is raised, and in extreme cases the typical signs and symptoms of myxedema are present. Menstruation is characteristically erratic, the amount of flow varying from scanty to very profuse, and the length of time between periods varying in an irregular and erratic way.

6. Frank, R. T.: Sex-Endocrine Factors in Blood and Urine in Health and Disease, in *Glandular Physiology and Therapy*, Chicago, American Medical Association, 1935; J. A. M. A. 104: 1991 (June 1) 1935.

7. Albright, Fuller, and Halsted, J. A.: Studies on Ovarian Dysfunction: II. The Application of the "Hormonal Measuring Sticks" to the Sorting Out and to the Treatment of the Various Types of Amenorrhea, *New England J. Med.* 212: 250 (Feb. 7) 1935.

8. Novak, Emil: Some Newer Aspects of Reproductive Physiology, *Am. J. Obst. & Gynec.* 30: 495 (Oct.) 1935.

9. Goldzieher, M. A., and Gordon, M. B.: Determination of the Specific Dynamic Action of Protein, and Its Value in the Diagnosis of Pituitary Disease, *Endocrinology* 17: 569 (Sept.-Oct.) 1933.

Undescended testicles are a potential cause of sterility; it has been shown that if they are still undescended after puberty they will in most cases irreparably have lost their ability to produce spermatozoa. This makes it imperative to have the testes in the scrotum before puberty. In the last few years there have been many reports of the bringing about of the descent of undescended testicles by the administration of gonadotropic substance. In almost all these cases the principle used has been the anterior pituitary-like substance of pregnancy urine. There seems to be no doubt of the efficacy of this in many cases, but the action is erratic and inconstant and, if the testes do not come down after a reasonable course of treatment, surgery is to be preferred to a prolonged series of treatments, which conceivably might have disturbing endocrinologic consequences.

#### THERAPY

In spite of the remarkable advances made in reproductive physiology there is still uncertainty on many points, so that it is not surprising that the therapeutic applications of these new advances are not yet altogether clearly defined. In general, the treatment of endocrinopathic sterility has not been very successful. Part of this has been due to ignorance of the exact physiology and pathology involved, so that various gland extracts have been used indiscriminately on the basis of a vague hope that extracts of organs obviously related to reproduction and pregnancy might somehow benefit sterile patients and increase their fertility. From the point of view of intelligent and effective treatment it is of fundamental importance in any given case to arrive at an accurate diagnosis of just which endocrine link is missing or at fault. For example, the administration of the pituitary gonad-stimulating principle is of absolutely no use whatever if tests show that the patient's own pituitary is already producing an excess of these to which the ovary will not respond.

In accordance with the fact that the administration of products made by the gonads not only does not stimulate them but has even been shown to injure them, the use of ovarian substance or of the two ovarian hormones, estrogenic substance and progestin, and of testis hormone is contraindicated in cases of sterility. The only exception to this rule is the use of the corpus luteum hormone, progestin, in cases of threatened or habitual abortion, already referred to.<sup>5</sup>

In cases in which the tests have shown the absence of anterior pituitary hormones their use is rational. It is very doubtful whether pituitary preparations given by mouth are effective at all. To date the hormones as obtained from the anterior pituitary itself have not been generally available. The first of the pituitary gonadotropic substances to be put on the market commercially and the one which has had a great vogue and has been used widely is the luteinizing factor, obtained from pregnancy urine. This is called the anterior pituitary-like gonadotropic substance. This is not an entirely pure hormone product, but its general effect is to stimulate the interstitial cells of the testis and to stimulate the theca cells of the ovaries to luteinization. The other anterior pituitary gonadotropic hormone has been available commercially for so short a time that few clinical results with it have been reported as yet. This hormone is obtained in comparatively pure form from castrate or menopause urine and is the follicle-stimulating fraction that stimulates the ovaries to follicle formation and the production of estrogenic substance and the testes to spermatogenesis.

Ovarian or testicular hypoplasia is usually due to the failure during adolescence of the necessary endocrine stimulus of the anterior pituitary. At the end of adolescence the genital developmental impulse usually stops and in most cases can never be reactivated by any endocrine treatment. Therefore, if pituitary failure has occurred during adolescence and the testes or ovaries have never developed and are markedly hypoplastic, usually nothing can be done for such patients when they are adults, because it is too late and the developmental impulse is permanently gone. However, the degree of hypoplasia may vary, and cases in which the hypoplasia is not marked are not necessarily beyond hope, even in adults, and are worth a clinical trial with gonadotropic pituitary hormones. Were such patients treated with gonad-stimulating pituitary preparations during adolescence, before it was too late, much might be done for them.

Furthermore, in sterile adults in whom the tests show absence of pituitary hormones a trial with them would seem worth while, as there is nothing to lose and everything to gain.

In amenorrhea due to hypopituitarism and in Fröhlich's adiposogenital dystrophy, therapy with luteinizing substance from pregnancy urine alone has been disappointing. This is not surprising in view of the fact that in many of these cases genital hypoplasia is so far advanced as to be beyond salvage, as already mentioned, and also in view of the fact that it is the other, the follicle stimulating, principle, only recently available commercially, that is theoretically the proper one to use to stimulate graafian follicle formation and spermatogenesis. In view of this last fact it is puzzling that stimulation of spermatogenesis following injections of the luteinizing factor has been reported by a few workers.<sup>10</sup> It would be interesting to see whether this could be consistently confirmed in a large series, as its use has been disappointing to me and also to others.

The simultaneous administration of both the follicle stimulating and the luteinizing factor has been shown to have a much greater effect than the simple sum of one added to the other and is referred to as the principle of augmentation or synergism. Therefore at the present time the simultaneous administration of both the follicle stimulating and the luteinizing factor would seem to be the best way to administer pituitary gonadotropic principles in cases of gonadal hypofunction, which have been shown by biologic tests to be secondary to anterior pituitary failure.

Another form of treatment in pituitary gonadal sterility is stimulating roentgen therapy directed to the pituitary and the gonads. Some esteem this treatment very highly and report good results<sup>11</sup> in increasing fertility in many cases.

Last, but far from least, the oral administration of thyroid is indicated in all cases presenting even a low normal metabolism, and obesity. In some way it also seems to act as a most valuable adjuvant in pituitary-gonad cases, possibly because it activates sluggish bodily processes. It is one of the most valuable aids in sterility, either alone or in combination with other therapy.

10. Brosius, W. L., and Schaffer, R. L.: *Spermatogenesis Following Therapy with Gonad-Stimulating Extract from Urine of Pregnancy*, J. A. M. A. **101**: 1227 (Oct. 14) 1933. Charny, C. W.: *A Clinical Study of Male Sterility*, J. Urol. **32**: 217 (Aug.) 1934. Heckel, N. J.: *A Clinical Study on the Efficacy of Hormones in Male Sterility*, Urol. & Cutan. Rev. **39**: 463 (July) 1935.

11. Bland, P. B.: *First, Arthur, and Goldstein, Leopold: The Clinical Investigation of Functional Sterility in the Female*, J. A. M. A. **103**: 1231 (Oct. 19) 1935.

## CONCLUSIONS

1. Much of the treatment of endocrine sterility in the past has been unsuccessful partly because miscellaneous gland therapy was used indiscriminately, based on vague hopes rather than on science.

2. Clinically there are three glands, the hypofunctioning of which are mainly responsible for most endocrine sterilities—the anterior pituitary most frequently, then the ovary and the thyroid.

3. In dealing with sterility of probable endocrine origin, it is of fundamental importance to find out by means of both clinical and laboratory observations, including biologic hormone tests, which gland is primarily responsible, in order to give the proper treatment intelligently and effectively.

4. The therapeutic injection of gonad substance not only does not stimulate the gonads but injures them and is contraindicated in sterility.

5. At the present time the simultaneous administration of both pituitary gonadotropic principles would seem to be the best form of therapy in cases of gonadal hypofunction which have been shown to be secondary to failure of the anterior pituitary.

6. Thyroid extract is a very valuable aid to the treatment of sterility.

7. Since nothing can be done for sterile adults with markedly and completely hypoplastic testes and ovaries, it is desirable for adolescents who present any endocrine symptoms, such as delayed appearance of the catamenia, to consult a physician and have treatment before it is too late and the developmental impulse is exhausted.

8. The therapy of endocrine sterility is not yet clearly defined in every way. However, in the last few years scientific progress has been made and more will undoubtedly follow in the near future.

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## ABSTRACT OF DISCUSSION

DR. MOSES SWICK, New York: Our knowledge concerning the sex cycle in the female is more clearly defined and advanced than in the male, perhaps because of more accessible methods of attack for investigation or because of the underlying differences in physiologic response in the two sexes. As Frank states, "in the healthy adult female a cyclic activity of the pre- or anterior pituitary is manifested by the cyclic blood and urinary curves. In the male there is no evidence of a pre-pituitary cycle or of a senile condition corresponding to the menopause." The testis hormones have been demonstrated in the urine. No cycle has been found and little correlation between functional diseases and changes in the humoral balance as yet has been discovered. Organic disease in the male can produce changes in the excretion of the gonadotropic principle. In the problem of sterility it may be theoretically necessary to deal not alone with the question of proper hormone selection for a given case but with the added difficulty of antihormone formation to the specific hormone as stressed by Collip, which may account for a state of supposed refractoriness. As stated by Moore, in the male, testis hormone is secreted continuously or periodically in different animals, secretion being largely under the influence of the anterior pituitary. It is not a testicular stimulant. Its primary function is the control of the accessory reproductive organs. The synthesis by Ruzicka and his co-workers recently of the pure male hormone testosterone, which belongs to the family of sterols, is a chemical achievement of great importance. Biologically it has been shown to induce the characteristic comb changes in the capon and growth of the accessory reproductive organs of the mammal. These compounds when they become commercially available may theoretically prove to be of value either alone or in conjunction with proper anterior pituitary hormone therapy in certain types of sterility. However, as pointed out by Dr. Chute, testis hormone injections of sufficient concentration may be injurious to the gonad tissue.

## THE SMALL INTESTINE

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Clinicians are beginning to attach some importance to the roentgen study of the small intestine. Relatively little investigative work has been done on this portion of the digestive tract by radiologists, and because of this the interpretation of lesions of the small intestine is much more difficult than of other portions of the gastro-intestinal tract. Consequently, only obvious lesions have been diagnosed. The difficulty of diagnosis, it seems to me, presents a challenge to those of us interested in this viscus. To accept this challenge, it is essential that collective studies be made of the small intestine in healthy individuals and in patients having lesions of the small intestine. It is well known that lesions involving other portions of the gastro-intestinal tract as well as conditions outside of it may exert a profound influence on the mechanics and pattern of the small intestine. Any investigation, therefore, should include a careful consideration of all such factors.

The small intestine has been amenable to being adequately studied by physiologic, chemical and roentgen methods in most instances, either individually or simultaneously, since the development of intestinal intubation by Miller and Abbott.<sup>1</sup> All methods are tedious and time consuming and considerable additional investigation will be necessary before such studies will be practical as routine procedures in gastro-intestinal examinations. It would be ideal if our knowledge of the small intestine in health and disease would progress to such an extent that it would be possible to correlate certain symptom complexes with lesions of this tract and roentgen studies be employed with the assurance that roentgenologists could affirm or disprove the presence of a lesion of this portion of the bowel. At any rate, with increased experience our ability to recognize abnormalities in the small intestine is improving. It is felt that the small intestine is the site of many more lesions than have been attributed to it by roentgenologists and clinicians. Many lesions of the small intestine undoubtedly have been attributed to neurosis because of failure adequately to study the entire gastro-intestinal tract.

In previous papers my associates and I<sup>2</sup> have presented a plea for a standard meal, so that one radiologist may compare his results with those of another. Our observations<sup>2a</sup> indicate that the pattern of the small intestine will vary considerably, depending on the composition of the foodstuff it receives. It varies also with the consistency of the meal, its size, the gastric emptying time and the tonicity of the intestinal tract. Furthermore, data have been collected by ourselves and others which indicate that certain pathologic conditions which only indirectly affect the intestinal tract may cause a very profound change in the small intestine pattern. Furthermore, if radiologists are to

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1. Miller, T. G., and Abbott, W. O.: Small Intestinal Intubation: Experiences with a Double-Lumened Tube, *Ann. Int. Med.* 8: 85-92 (July) 1934.

2. (a) Ravdin, I. S.; Pendergrass, E. P.; Johnston, C. G., and Hodes, P. J.: The Effect of Foodstuffs on the Emptying of the Normal and Operated Stomach and the Small Intestinal Pattern, *Am. J. Roentgenol.* 35: 306-315 (March) 1936. (b) Pendergrass, E. P.; Ravdin, I. S.; Johnston, C. G., and Hodes, P. J.: Studies of the Small Intestine: II. The Effect of Foods and Various Pathologic States on the Gastric Emptying and the Small Intestinal Pattern, *Radiology* 26: 651-662 (June) 1936.

assist in the study of food allergy and its effects on gastro-intestinal motility and pattern one must have a base line from which to draw comparisons.

The meal that we use consists of 5 ounces (140 Gm.) of barium sulfate and 5 ounces (150 cc.) of water. Such a meal has the consistency of a thick pabulum but allows excellent visualization of the mucosal pattern. The normal stomach empties such a meal in the majority of instances within two hours; occasionally the period is as long as three hours. The small intestine stream is continuous with little if any regurgitation or peristaltic rushes. In the beginning the jejunal pattern has a somewhat obscured herringbone appearance. As the meal passes distally the herringbone pattern becomes more evident and this is followed by a feathery, snowflaked pattern, the latter being due to retained barium in the vasa digestiva. Usually no central lumen is discernible in the jejunum. There is a tendency for the jejunum to have segmental contractions, which have been interpreted as being due to circular and longitudinal muscle contractions. In such areas the pattern tends to form longitudinal folds. Elsewhere in the jejunum the folds are transverse. Occasionally one sees a wavy appearance, which is probably due to rapid motility at the moment. In the ileum the pattern is frequently that of a series of small irregular boluses. Occasionally the mucosal pattern is seen and suggests coins placed one on the other. The intermucosal space is usually wider than that seen in the jejunum. No gas is ever found in the small intestine of the normal individual.

The head of the column reaches the cecum occasionally in one and one-half hours. In most instances it requires from two to three hours to reach the cecum and from four to six hours for the intestine entirely to empty itself. Under control circumstances the small intestine motility is so gradual that most careful observation is necessary to detect peristaltic movements, segmental contractions and changes in the mucosal pattern. We believe this is extremely important, and when these phenomena are apparent at a glance, we immediately assume that there is something abnormal. On one occasion in a healthy control the small intestine motility was very rapid, the head of the column reaching the cecum within thirty-five minutes. These phenomena are similar to those seen after the administration of magnesium sulfate. We are unable to account for this. I have seen this before in patients who stated that there occurred abdominal cramps after taking barium sulfate whereas under the conditions usually imposed on the gastro-intestinal tract no such symptoms are present.

The exact length of the small intestine during life is not known. It is generally agreed that the upper three fifths of the small intestine consists of the jejunum and that generally this lies to a large extent in the left side of the abdomen. The jejunum, or "hungry gut," is larger in diameter than the ileum, the diameter of the small intestine normally decreasing from the duodenal jejunal flexure to the ileocecal valve.

The lumen of the small intestine as a whole seems to be smaller in fat individuals as compared to thin. I have an impression also that there is a difference in the size of the intestine in men and in women, but further control studies are necessary before making a definite statement.

The small intestine not only plays a major rôle in preparing foodstuffs for digestion but it also is the portion of the gastro-intestinal tract which is most

active in the absorption of the products of digestion. Forssell<sup>3</sup> and Cole<sup>4</sup> believe that, during digestion, digestive compartments and digestive alveoli referred to as a feathery snowflaked pattern are formed as a consequence of what they have termed the autoplasty of the mucous membrane. A variety of patterns of the small intestine may result not only from variations in the muscle tonus but also in rearrangements of the mucous membrane folds.

The examination of the small intestine requires several hours as a rule, and occasionally its physiologic function has been disturbed as a result of the patient having developed a headache because of food being withheld. We have also been unable to determine what part psychic or emotional disturbances may take in influencing the small intestine motility and pattern, but we have reason to believe that fear is occasionally a potent factor.

The thick meal in our experience does not cause any increase in the frequency of impaction. If one fears this, a laxative or dose of liquid petrolatum after the completion of the examination should prevent one from developing an impaction. The taste is bland and there are no more complaints of this than of other mixtures.

Normal variations and anomalies occur more frequently than was anticipated, and, as elsewhere, the variants will probably occur in a frequency proportional to the thoroughness of the examination and one's ability to detect them.

Very small diverticula (from 1 to 3 mm.) as well as larger ones are not uncommon.

The finding of the small intestine on the right side of the abdomen is usually associated with a left sided colon.

Retroperitoneal herniation of the small intestine may be recognized by the fact that usually it may form a conglomerate mass in the middle of the abdomen and motility may be delayed considerably.

Occasionally the position of the small intestine (riding over the colon) is such that it may lead to the development of a megacolon and occasionally to obstruction.

We have studied a variety of intrinsic lesions that will affect the pattern and motility of the small intestine, many of which have been previously described by other authors. These include tumors of the small intestine, worms, obstruction, ileitis, tuberculosis, nephrosis, primary jejunal ulcers (individuals in whom a gastro-enterostomy has not been performed) and secondary jejunal ulcers.

Intussusception of the small intestine may occur in any portion of the intestine. Small intrinsic tumors have been present in the two instances in which we have observed this phenomenon in the jejunum.

Radiologists have been called on by some to diagnose the point at which the intestine is obstructed. We have been impressed with the number of variants from the position of five groups of small intestine coils described by Cole.<sup>5</sup> We have noticed a marked difference between two different examinations in the same individual and because of this we feel that the radiologist should be extremely careful in identifying for the surgeon the point of obstruction in the small intestine.

3. Forssell, Gösta: Studies of the Mechanisms of Movement of the Mucous Membrane of the Gastro-Intestinal Tract, *Am. J. Roentgenol.* 10: 87 (Feb.) 1923.

4. Cole, L. G.: Motor Phenomena of the Stomach, Pylorus and Cap Observed Roentgenologically, *Am. J. Physiol.* 42: 618, 1917.

5. Cole, L. G.: *Roentgenology of the Small Intestine*, W. G. Morse, R. R. Headland, C. I. and W. H. W. Exploration of the Mucosa of the Gastro-Intestinal Tract, Saint Paul and Minneapolis, Bruce Publishing Company, 1934.

Various drugs,<sup>6</sup> especially the sedative group, have a profound effect (delayed motility and small intestine gas) on the gastro-intestinal tract for at least twenty-four hours and in some instances as long as five days. The radiologist therefore should be careful to exclude a drug effect before making an interpretation of obstruction or delayed motility.

Other lesions that will disturb the normal physiology and that have received certain attention from the radiologist are extrinsic lesions such as tuberculous (mesenteric) lymph nodes and abdominal tumors. There is a group of abdominal lesions that will affect the small intestine reflexly. These include renal stones (with crises), gallbladder disease, adrenal tumors and retroperitoneal extravasations and infection. Retroperitoneal tumors and perinephric abscess, and possibly kidney infection, metastatic carcinoma and tuberculous peritonitis, in fact, anything that will give rise to peritoneal irritation, will disturb the physiologic function of the small intestine. The frequent complaint of abdominal discomfort with gas can be explained in a great many instances by disturbed function of the small intestine and has been misinterpreted by all patients and many physicians.

Extra-abdominal lesions may also affect the small intestine. These include hyperthyroid and hypothyroid disease. We have made a collective study of twenty-five patients before and three months after operation. The results of this study are being prepared now. Pituitary and brain tumors, diabetes insipidus, tabes, neurocirculatory and cardiac disease and spinal cord lesions will profoundly affect the physiology of the small intestine. It is necessary, therefore, to bear these conditions in mind in evaluating the x-ray observations.

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#### ABSTRACT OF DISCUSSION

DR. HARRY M. WEBER, Rochester, Minn.: Dr. Pendergrass and his collaborators deserve praise for the excellent work they are continuing on the anatomy and physiology of the small intestine. Hitherto this field of roentgenologic diagnosis has been somewhat neglected, but the work of these men has been richly informative and stimulating, and we who are particularly interested in gastro-enterologic roentgenology do well to commend and to encourage continued efforts along these lines. At the suggestion of Dr. Pendergrass I take the liberty of extending his discussion to remark briefly on the roentgenologic manifestations of pathologic processes affecting the small intestine. Like the colon, the small intestine is a tubular organ, and, in their morphology and pathogenesis, the pathologic processes which occur in the small intestine are similar to those which occur in the colon. Thus there are tumefactive processes which may be neoplastic, e. g., carcinoma, sarcoma and benign tumors, or non-neoplastic, e. g., tuberculoma and other tumor-producing inflammatory processes. More or less diffuse ulcerative processes occur as well, such as tuberculous enteritis and the enteritis (ileitis) to which Krohn and his collaborators called attention. Certain deficiency diseases are manifested by roentgenologically demonstrable morphologic changes in the small intestine. Finally, the small intestine is relatively frequently involved secondarily by pathologic processes, especially tumors, of neighboring and contiguous organs, deforming it segmentally either by direct extension and invasion or by producing a trophic type of ulceration into its lumen. From typical examples it is plain that lesions of the small intestine are demonstrable roentgenologically and that a satisfactory differential diagnosis can be elaborated by using the principles proved sound through long experience in the roentgenologic diagnosis of diseases of the large intestine. The

roentgenologic examination of the small intestine is difficult only because its relatively complicated anatomic arrangement makes the necessary close roentgenoscopic and roentgenographic scrutiny of each small portion of its entire length seem comparatively arduous and time consuming, and because its rapid and involved motility may produce a variety of peculiar and quickly changing mucosal patterns, not to be too readily endowed with pathologic significance.

DR. E. V. POWELL, Temple, Texas: This report of pathology of the small intestine is very valuable. I hope to avoid repeating an error I made a number of years ago in examining a patient who complained of symptoms indicative of obstruction in the lower small intestine. I reported no lesion found. About a year later the patient was again examined, at that time by barium sulfate enema. From the second examination I reported a small malignancy near the apex of the sigmoid. At operation a primary carcinoma of the ileum that involved the adjacent sigmoid by direct extension was found. I doubtless had missed it the first time I examined the patient.

#### SEASONAL HAY FEVER AND ASTHMA DUE TO MOLDS

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In a previous report it was shown<sup>1</sup> that the non-pathogenic spores of molds found in the air are frequent causes of asthma and nasal allergy. Thus far no emphasis has been placed on the fact that these symptoms frequently assume a seasonal character and become confused with pollen hay fever and asthma. It is my purpose in this paper to call attention to a group of patients whose respiratory manifestations are confined to the summer or aggravated in that season by sensitiveness to fungi instead of pollen.

Over a period of several years, impressions gained from clinical and laboratory observations with respect to seasonal hay fever and asthma culminated three or four years ago in the belief that these symptoms are not always due to pollen. The fact that there are many patients who respond only partially or not at all to pollen treatment led to the suspicion that something additional might be found with regard to the etiology. Since it has been repeatedly established that in pollen hay fever the symptoms vary almost directly with the height of the pollen count, it was perplexing to encounter patients whose symptoms did not at all agree with the daily pollen determinations. The histories of some of these patients were either not as definite with regard to the onset or cessation of symptoms as they are customarily found in pollen cases or the symptoms overlapped the season at both ends. Negative or questionable skin and mucous membrane tests with pollen constituted another disturbing observation. And finally, while pollen counts were being made, summer after summer, the spores of molds and rusts were being encountered on the slides. These occurred in such large numbers at times that one could not help but speculate on the possible rôle they might have in the causation of hay fever.

(Continued on page 1864)

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Read before the Section on Pathology and Physiology at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, May 15, 1936.

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Essential Points in Fifty-Four Cases of More or Less Seasonal Asthma or Hay Fever in Which Fungus Sensitization Can Be Shown to Play a Definite Part

					Tests with Fungi								Other Reactions	Evidence for Etiology	Treatment with Mold Extracts Best
					Alternaria	Aspergillus	Penicillium	Mucor	Hormodendrum	Monilia	Chaetomium	Yeasts			
	Age	Duration, Years	Season	Diagnosis											
1. Sheldon H.	6	1	July 15-October	HF	+	..	..	..	..	..	..	..	Rag +	Early onset for ragweed	None
2. James H.	8	5	May-November; slight perennial	HFA	+	+	+	..	+	..	..	+	Rag +, grass +	Onset too early and end too late for pollen; attack during stock show in November	None
3. Harold K. (aviator)	30	8	April-October slight perennial	HF	+	+	..	..	..	..	..	..	Pollen 0	Negative to pollen; flying increases symptoms; above 8,000 feet symptoms disappear	None
4. Tommy L.	11	7	Perennial; worse in summer	A & HF	+	..	..	..	..	..	..	+	Rag ?; grass ?	No effect from pollen treatment; observation during season	None
5. Sherwin M.	8	3	May-October; slight perennial	A & HF	+	..	..	..	..	..	..	+	Rag +, others 0	Early onset; symptoms on mold days	Late
6. Frank McK.	16	5	July-November; slight perennial	HF	+	..	..	..	?	..	..	+	Rag +, others 0	Onset earlier than ragweed season	Late
7. Mary N.	6	3	July-October	HFA	+	..	..	..	..	..	..	+	Rag +, others 0	Early onset; symptoms on mold days	Late
8. Harold O.	22	18	July; slight perennial	HF	+	+	..	..	..	..	..	+	None	Negative to pollen; symptoms on mold days	None
9. Ina S.	8	6	May-November; slight perennial	HTA	+	..	..	..	..	..	..	..	Rag +, others 0	Observation during season; no results from pollen treatment	None
10. Stanley S.	7	4	May-October; slight perennial	HF & A	+	+	..	..	..	..	..	+	Rag +, other pollen 0	Onset prior to ragweed season; symptoms on mold days; no results from previous pollen treatment	Late
11. Michael W.	5	3	May-October mostly	HF & A	+	..	..	..	..	..	..	..	Rag ?, other pollen 0	Onset prior to ragweed season; observation on mold days	Late
12. Jules S.	7	3	June-December	HF, cough	+	..	..	..	..	..	..	..	Grass +	Pollen reactions incompatible with season	None
13. Robert W.	5	2	May-November	HF & A	+	+	+	+	..	..	..	..	Rag +, others 0	Ragweed reaction does not explain season; symptoms in hay fever resort	Late
14. Dolores B.	6	3	June-Fall; slight perennial	HF & A	+	..	..	+	+	..	..	..	Rag +	Onset earlier than ragweed season	Late
15. Bud B.	10	4	July-October	HF & A	+	..	..	..	..	..	..	..	None	Pollen negative; worst symptoms during heavy mold days; attacks when playing in hay loft	None
16. Howard O.	10	8	May-November mostly	A	+	+	..	+	..	..	..	+	Rag +, grass 0	Worst on heavy mold days; season; ragweed treatment gave no relief	None
17. Harriet D.	39	14	Perennial; worse in August and September	A & HF	+	+	..	..	..	..	..	+	Rag 0, foods +, feathers +	Pollen negative; residence in old homes caused attacks	None
18. Joan F.	6	2	July-October	HF & A	+	..	..	..	..	..	..	..	Rag +, other pollen 0, foods +	Symptoms before ragweed season	Late
19. Marjorie G.	7	3	May-October	HF	+	..	..	..	..	..	..	..	Rag +, grass +, trees +, foods +	Symptoms on pollen-free days	Late
20. Mrs. G. G.	25	5	June-cold weather	HF	+	..	..	..	..	..	..	..	None	No pollen reactions	None
21. Harry P.	26	15	Perennial; worse in late summer	HF	+	?	..	..	..	..	..	..	None	Seasonal aggravation with no pollen reactions	None
22. Jack R.	20	6	Late June-October	HF	+	+	..	..	..	..	..	..	Rag ?, grass ?	Symptoms on pollen-free days; no results from pollen treatment	Late
23. Eugene G.	17	10	May-October; occasionally perennial	HF & A	+	..	..	..	..	..	..	+	Rag +, others 0	Symptoms prior to ragweed season; no improvement by pollen treatment	None
24. Suzanne H.	8	3	May-November; slight perennial	HF & A	..	..	..	..	..	+	+	+	Rag ?, grass ?	Indifferent results from pollen treatment; symptoms outside of pollen seasons and between pollen seasons	None
25. Andrew I.	9	4	May-October; occasionally winter	A	+	+	..	+	..	..	..	+	Pollen 0, foods +	Seasonal, without pollen reactions; attacks on exposure to dust, old leaves, basement	None
26. Marshall S.	11	6	May-November	HF, slight A	+	+	..	..	..	..	+	..	Rag +, others 0	Season; observation during season; pollen treatment gave no results	None
27. Judd B.	28	20	Summer mostly	HF & A	+	+	+	..	+	..	..	+	Pollen ?	Bad on nonpollen days in summer; no results from several seasons of pollen treatment; some benefit from mold treatment	Yes
28. Jack L.	13	12	Mostly June-Fall	A & HF	+	+	+	..	..	..	..	..	Rag ?, others 0	Observation during season; attacks at circus; poor results with pollen therapy	Late
29. John B.	28	9	April-October	HF	+	..	..	..	..	..	..	..	None	Negative pollen tests; observation during season; results of mold treatment	Yes

Abbreviations are as follows: HF, hay fever; A, asthma; +, definite reaction varying from one to four plus; 0, negative; ?, reaction only positive intradermally. The routine tests as noted in this table were made by the scratch method, and the reactions recorded are of the immediate type. Other fungi than those tabulated were used in testing but for the sake of brevity are not recorded here.

Essential Points in Fifty-Four Cases of More or Less Seasonal Asthma or Hay Fever in Which Fungus Sensitization Could Be Shown to Play a Definite Part—Continued

		Age	Duration, Years	Season	Diagnosis	Tests with Fungi								Other Reactions	Evidence for Etiology	Treat- ment with Mold Extracts	Results
						Alternaria	Aspergillus	Penicillium	Mucor	Hormodendrum	Monilia	Chaetomium	Yeasts				
30. Arthur B.	14	5—	May-October; slight perennial	HF&A	+	..	..	..	..	..	..	+	..	Rag +, grass +	Symptoms on pollen-free days; pollen treatment gave partial results; addi- tion of mold treatment improved results	Yes	100%
31. Mrs. M. C.	30	3	April-October	HF&A	+	+	..	..	..	..	..	+	..	Rag +, other pollen 0	Symptoms outside of rag- weed season; addition of mold treatment improved results	Yes	100%
32. Barbara D.	5	3	Mostly summer	HF&A	+	..	..	..	..	..	..	+	..	Rag +, others 0	No results from pollen treatment; observation during season; good results with mold desensitization	Yes	75%
33. Avis G.	20	20	April-December; slightly in winter	HF&A	+	+	+	..	..	..	..	+	..	Pollen 0, foods, etc. +	Several seasons of inten- sive pollen treatment with- out results; severe symp- toms on mold and pollen- free days; systemic reac- tions and improvement with mold treatment	Yes	75%
34. Mrs. S. G.	39	15	May 10-October	A	?	?	?	..	..	..	..	..	..	None	Seasonal symptoms with- out pollen reactions; pre- vious pollen treatment without benefit; good results from mold treatment	Yes	90%
35. Irene H.	8	6	Perennial; worse in summer	HF&A	+	+	..	..	+	..	..	+	..	Rag +, others 0	Season; observation during season; results of mold desensitization	Yes	99%
36. William K.	6	4	July-November; slight in winter	HF	..	+	..	..	..	..	..	+	..	Rag +, grass ?, foods +	Symptoms overlapping the pollen seasons; severe symptoms on mold days	Yes	0%
37. Minnie L.	60	4	Perennial; worse in summer	A&HF	+	+	+	..	..	..	..	..	..	None	other reactions negative; season; results of desensitization	Yes	95%
38. Harry P.	26	10	May-October	HF	+	..	..	..	..	..	..	..	..	None	Negative to pollen; season; observation on mold days; results of treatment	Yes	75%
39. Jack M.	8	4	April-frost	HF	+	..	..	..	..	..	..	..	..	Rag +, others 0	Season; negative to grass and trees; observation; results of mold treat- ment; systemic reactions during treatment	Yes	75%
40. Glen R.	18	11	April-October; slight perennial	HF&A	+	+	+	..	..	..	..	..	..	Rag +, grass +	Overlapping of pollen season; worse at times when no pollen in air; results improved by addi- tion of mold treatment	Yes	90%
41. Elaine R.	14	10	May-October; slight perennial	HF&A	+	..	..	+	+	+	+	+	..	Pollen ?	Observation on mold days; improvement with mold desensitization	Yes	50%
42. Helen R.	13	10	Worse in summer	HF	+	..	..	..	..	..	..	..	..	Rag +, other pollen ?, foods +, epidermals +	Previous pollen treat- ment gave no results; seasonal observation; good results with mold treatment	Yes	50%
43. Marvin S.	14	8	June-October; slight perennial	HF&A	+	..	..	..	..	..	..	+	..	Rag +, grass 0	Bad on mold days; results improved with mold desensitization	Yes	75%
44. Mrs. N. S.	24	16	Perennial; worse June-frost	HF	+	..	..	..	..	..	..	..	..	Rag +, grass +	Observation during mold days; season; aggrava- tion by exposure to musty basement	Yes	75%
45. Kent S.	5	2	Perennial; worse July-October	HF&A	+	+	..	..	..	..	..	..	..	Rag +, grass 0	Observation on mold days; improved with mold treatment	Yes	90%
46. Maryline S.	7	4	Perennial; worse May-November	HF&A	+	+	+	..	..	..	..	+	..	Rag +, grass +, foods +	Observation during mold days; season; aggrava- tion by exposure to musty basement	Yes	50%
47. Raymond V.	10	4	Perennial; worse in summer	HF&A	+	+	..	..	+	..	..	+	+	Rag +, grass +	Observation on mold days; improved with mold treatment	Yes	90%
48. Mrs. B. W.	42	16	June-October; slight perennial	HF&A	+	+	..	..	..	..	..	..	..	Rag +, grass 0	Season; observation on mold days; poor results with pollen treatment; improved results by addi- tion of mold treatment	Yes	95%
49. Thomas W.	10	9	Perennial; worse in October	HF&A	+	+	+	+	+	..	..	+	..	Rag +, grass 0	Season; observation during season; results of mold treatment	Yes	75%
50. William Z.	14	3	May-November	HF	+	..	..	..	..	..	..	+	..	Rag +, grass +	Symptoms still present 11/9/34; results of mold treatment	Yes	100%
51. Bobby D.	8	6	May-frost; slight perennial	HF	+	+	+	..	..	..	..	+	..	Rag +, grass 0	Observation during season; no results with pol- len treatment; good results with mold treatment	Yes	75%
52. Louis R.	6	3	Mostly spring and fall	HF&A	+	..	..	..	+	..	..	..	..	Rag +, others 0	Observation on mold days; extent of season results of treatment	Yes	95%
53. Arlee S.	5	3	Perennial; worse in summer	HF&A	+	+	..	+	..	..	..	+	+	Pollen 0, foods +	Observation during season; systemic reactions; results of mold treatment	Yes	75%
54. Herbert K.	10	4	April-October; slight in winter	HF, slight A	+	..	..	..	..	..	..	+	+	Pollen ?, others 0	Previous pollen treatment gave no results; worse on mold days; systemic reactions with mold treatment, with some clinical improvement	Yes	50%

(Continued from page 1861)

It is necessary to call attention at this point to the fact that the conception of fungi as causes of respiratory allergy is not new. Van Leeuwen<sup>2</sup> of Holland and later Hansen<sup>3</sup> of Germany stressed the importance of nonpathogenic fungi in asthma. Cadham<sup>4</sup> in 1924 described asthma due to rusts. Molds as causes of asthma were not reported in this country until 1930, by Hopkins and his co-workers<sup>5</sup> and by Bernton.<sup>6</sup> As a matter of fact, Blackley,<sup>7</sup> experimenting on his own hay fever about seventy years ago, described a nasal and bronchial reaction having all the earmarks of allergy, on inhaling mold spores. He concluded, however, that this had nothing to do with the cause of hay fever. Had he not chosen to ignore this experiment, our knowledge of that subject would probably not have been dormant for so many years. Since 1930 a number of papers dealing with mold allergy have appeared. Until recently the instances of mold allergy reported were described as more or less medical curiosities; i. e., unusual cases due to exceptional environmental sensitizations, such as a moldy mattress, a musty basement or similar special exposure.

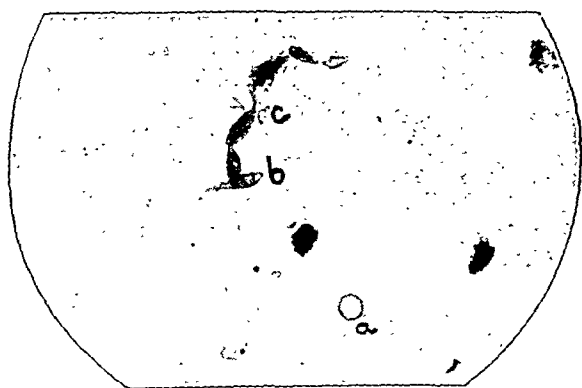


Fig. 1.—Magnified field on glass slide which has been exposed outdoors for pollen counting. Note the pollen and also the fungus spores. a, ragweed pollen; b, *Alternaria* spores; c, other spores, probably *Hormodendrum*.

My own point of view has been somewhat different. Since mold spores are present in the outdoor air in greater numbers than in indoor air, as shown by culture plate and slide studies, they are to be regarded as possible causes of allergy in every individual. Thus encouragement was given to make a wider selection of mold extracts for sensitization studies and to conduct such studies in a routine manner on allergic patients. In this way it was possible to uncover a large group of fungus-sensitive patients, thus elevating the fungi to a high place in the scale of important allergens. The results of part of this work have been previously reported.<sup>1</sup>

Later, after the importance of mold allergy in general had become recognized, it became evident that many of these mold-sensitive individuals had seasonal ten-

dencies; i. e., their symptoms were confined to the warm months or aggravated at that time. Our studies<sup>1</sup> on the mold content of the air by means of daily culture plates for almost two years along with our previous slide studies have corroborated our conception of the presence of a seasonal group of hay fever and asthma patients whose symptoms are due to molds. It might be mentioned that in the presentation of fungus-sensitive patients by Bernton,<sup>6</sup> Brown,<sup>9</sup> and Underwood,<sup>10</sup> seasonal aggravation is mentioned in some of the case reports but the possible importance and significance of this is not made apparent.

#### CLINICAL OBSERVATIONS AND "SEASONS"

From the records of private patients there have been selected fifty-four who can be classed into a distinct group. These individuals have hay fever or asthma, or both; their symptoms are either entirely confined to the warm months or are aggravated during that period; and it can be demonstrated that fungus spores play a part in the causation of their symptoms. Mold-sensitive patients who have no seasonal variations have not been included in this group. Neither have been included any individuals whose seasonal variations in symptoms could not be definitely ascribed to fungi although they reacted to the latter. It is true that of the fifty-four patients very few are sensitive to fungi alone. It is also admitted that the majority of these individuals had varying degrees of difficulty during the winter months. In this respect, however, this group does not differ materially from the pollen group. Many of those who present themselves for hay fever management have symptoms during the nonpollen months and the majority of them are sensitive to other allergens in addition to the pollen. Nevertheless, these patients are classified primarily as having hay fever. In the same sense there is reason to regard these seasonal mold-sensitive patients as a distinct group.

The evidence for the claim that in this group seasonal hay fever or asthma is caused by sensitivity to the air-borne spores of fungi may now be briefly analyzed:

1. All these patients have positive skin tests to fungi. The extracts are made from pure cultures of atmospheric molds. With the exception of two patients, all positive diagnostic tests were obtained by the scratch technic. Usually reactions to more than one type of mold were obtained. The accompanying table shows the reactions to a few of the most important of these fungi.

2. In most of the instances in which it was tried, a positive Prausnitz-Küstner reaction was obtained. The site of skin of a normal individual injected with the serum of the patient reacted specifically to the suspected mold, while the skin of the other arm failed to react. This demonstrated that the original reaction on the patient was in no sense a nonspecific or "false" reaction.

3. The majority of these patients, on careful inquiry, gave a history of a "season" which either did not agree with their individual pollen reactions or with any pollen season. This is evident when the table is studied. It is to be remembered that most of the cases reported

2. Van Leeuwen, W. S.: *Bronchial Asthma in Relation to Climate*, Proc. Roy. Soc. Med. 17: 19, 1924.

3. Hansen, K.: *Ueber Schimmelpilz-Asthma*, Verhandl. f. inn. Med. Kong. 40: 204, 1928.

4. Cadham, F. T.: *Asthma Due to Grain Rusts*, J. A. M. A. 82: 27 (July 5) 1924.

5. Hopkins, J. G.; Benham, R. W., and Kesten, B. M.: *Asthma Due to a Fungus—Alternaria*, J. A. M. A. 94: 6 (Jan. 4) 1930.

6. Bernton, H. S.: *Asthma Due to Mold—Aspergillus Fumigatus*, J. A. M. A. 95: 189 (July 19) 1936.

7. Blackley, C. H.: *Hay Fever: Its Causes, Treatment and Effective Prevention*, Experimental Researches, ed. 2, London, Bailliere, Tindall & Cox, 1880.

8. Feinberg, S. M., and Little, H. T.: *Studies on the Relation of Micro-Organisms to Allergy: III. A Year's Survey of Daily Mold Spore Content of the Air*, J. Allergy 7: 149 (Jan.) 1936.

9. Brown, G. T.: *Sensitization to Fungi*, Ann. Int. Med. 6: 655 (Nov.) 1932.

10. Underwood, G. R.: *The Importance of Fungus as a Cause of Asthma in Nebraska*, Nebraska State M. J. 20: 400 (Oct.) 1935.

ere are from around the Chicago area. The important pollen seasons there are usually as follows: trees, April and May; grasses, May 15 to July 15; ragweeds, August 10 to September 20. Thus it is evident, for example, that patient 26, who has hay fever from May to November and whose sole pollen reactor is ragweed, must be sensitive to something else, at least from May to August and from October to November.

4. In most instances there has been opportunity to observe these patients during the summer. Records of their symptoms have been kept and have been com-

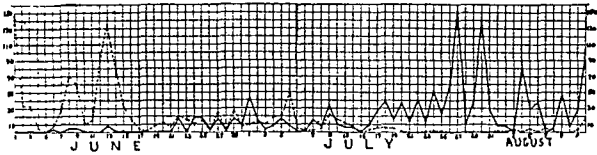


Fig. 2.—Number of pollen grains and spores (*Alternaria* only) in the air every day during the midsummer of 1935 in Chicago. Solid line, *Alternaria* spores; broken line, pollen. These figures were obtained by examining the usual surface of the slide (1.8 sq. cm.) used for pollen counting. Note that from about July 15 to August 10 there was practically no pollen. At the same time there were great numbers of fungus spores. Patients who had marked symptoms during that period and milder symptoms earlier could certainly be suspected of mold allergy. (Reproduced by permission of the C. V. Mosby Company, from the *Journal of Allergy* 7:149 [Jan.] 1936.)

pared with daily analysis of the air with respect to pollen and mold spore content. It was definitely established that these individuals are really affected by the mold spores in the air. This was not always easy to do, since the same weather factors tend to influence both the pollen and the mold content in the same direction. However, there is a discrepancy at times which makes clinical interpretation possible. For example, in the summer of 1935 there was practically no pollen in the Chicago air from July 18 to August 10, but the mold spore count was high (fig. 2). These patients had considerable trouble during that period and their clinical sensitivity to fungi could be corroborated. There were a number of other periods when such opportunity for the separation of pollen and mold factors presented itself.

5. A number of these patients had been previously treated by others with pollen extracts with either complete or almost complete failure. I also had the experience of treating a few of these patients with pollen, with no improvement.

6. A few patients experienced systemic reactions during the course of mold desensitization.

7. The results of desensitization with mold extracts in about half of this group indicate a specific clinical effect. Many of these sufferers had received pollen treatments previously with little or no benefit.

As a matter of fact, these patients constitute so definite a group that recently it has been possible to surmise the true nature of the case in about three fourths of the instances on the basis of the history, before skin tests were made.

Now what constitutes a mold "season"? Strictly speaking, molds are never out of season. Viable spores have been found in the outside air every day of the year—even when the temperature ranged around 18 degrees below zero. For the 1934-1936 period in Chicago the intervals from December to March showed a minimum number of atmospheric spores. About April there begins a considerable increase in the number. July, August and September are possibly the worst months.

The "season" will depend, therefore, on the degree of tolerance of the individual. If his tolerance is fairly high, his symptoms might occur from July to October. If it is low, he may have symptoms from April to December. If as little as two or three spores per cubic yard of air will cause symptoms, the individual will have perennial symptoms. There also seems to be some differences in the prevalence of certain fungi at various times of the year. The particular fungi to which the individual is sensitive may modify his season.

What is said about seasons in this part of the country will not be applicable, of course, to remote parts. Preliminary samplings of the atmosphere from a few distant sections have shown tremendous differences. These studies are continuing in that direction, so that the results may be ultimately of help to physicians and patients in various localities.

Little will be said here about the actual causes of these symptoms—the molds. In this communication the discussion is limited to the nonpathogenic fungi the spores of which contaminate the air. These spores originate from the soil or from the fungi growing on decaying or living higher plants. It has been shown by a number of observers that these spores can be found at very high altitudes and at places very remote from their sources of origin. In our studies thus far<sup>8</sup> we may list the following genera among the most common fungi to which the individual is exposed: *Alternaria*, *Hormodendrum* (*Cladosporium*), *Penicillium*, *Monilia*, *Aspergillus*, *Chaetomium*, *Fusarium*, *Mucor*, *Rhizopus*, *Trichoderma*, *Cephalothecium* and *Actinomyces*. Yeasts are also quite common. From the standpoint of reactions in the group of patients presented *Aspergilli*, yeasts and *Alternaria* appeared to be most important, the latter reacting in practically every case. It is well to mention here that there have been a few patients

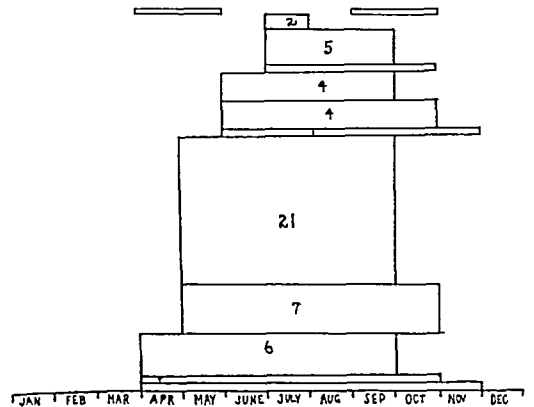


Fig. 3.—Seasons of asthma and hay fever due to fungi in fifty-four patients. The thickness of the blocks and the figures represent the number having symptoms during those particular months. For example, twenty-one patients had their season from May to October. Most of the patients also had slight symptoms during the winter months, but this is not depicted on the chart.

having all the characteristics of seasonal mold allergy, with negative skin reactions. Apparently there are other fungi or totally different antigens which it may be necessary to learn to recognize.

#### SPECIFIC TREATMENT

In this group of fifty-four patients with mold hay fever and asthma, twenty-eight were given desensitization therapy with appropriate mold extracts and observed during the season sufficiently so that the

results may be evaluated.<sup>11</sup> Eleven other patients were treated with mold extracts, but their treatment was begun late in the season so that the results cannot be ascertained at the present time. Among the twenty-eight patients who were given a fairly complete course of treatment, some were treated also with pollen. It is to be recalled that many of these patients had been treated with pollen previously with practically no benefit. However, the results of the mold desensitization can be evaluated by observation during the season, according to the indications outlined earlier in the paper. It is possible, therefore, to analyze definitely the effect that mold desensitization had in these patients. The results were as follows:

Eleven patients had from 90 to 100 per cent relief.  
Twelve patients had 75 per cent relief.  
Four patients had 50 per cent relief.  
One patient had no relief.

In this communication it is not feasible to go at length into a discussion of the technic of treatment. In general it may be said that it resembles very closely that of pollen treatment. The beginning doses are usually

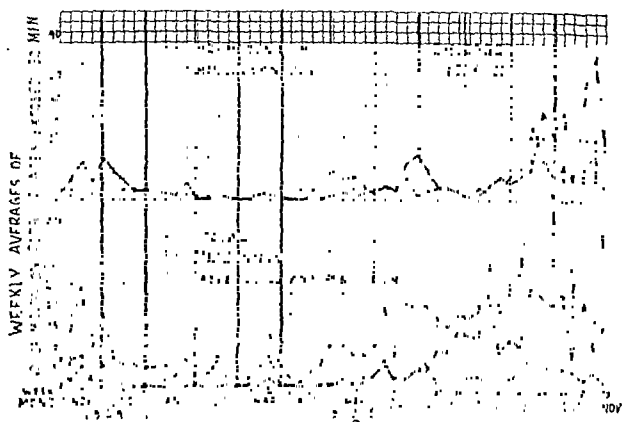


Fig. 4.—The numbers of fungi as obtained from culture plates exposed to the outside air. The numbers represent the colonies on a standard size petri plate exposed for thirty minutes (two plates, fifteen minutes each) daily and averaged by the week. Only several groups of fungi were considered here. Note the preponderance of *Alternaria* and *Hormodendrum* in the summer and fall. January to May constitutes almost a closed season for these particular fungi. (Reproduced by permission of the C. V. Mosby Company from the *Journal of Allergy* 7: 149 (Jan.) 1936.)

about 0.1 cc. of the 1:10,000 or 1:100,000 of the mold extract, on the basis of the dry weight of the pellicle. The maximum doses at the end of the course of treatment have usually been a fraction of a cubic centimeter of 1:100. It is suspected that some of the patients require larger maximum doses for better results. It is likely that improvement in the results will occur when increased knowledge will make it possible to choose more accurately the antigens to be used in the individual case. Systemic reactions have been encountered just as in pollen therapy, indicating the potency of the material and the clinical sensitivity of the individual.

The following case reports will illustrate some of the salient features of this group of patients:

CASE 33.—Aug. 4, 1934, Avis G., a 30 year old assistant in the Department of Pathology, came to the clinic for her regular pollen treatment. On this particular morning she consulted us because of the marked asthma and hay fever from which she had been suffering. Her symptoms were intense. Her record showed that she was receiving almost a cubic centimeter

of each of the 1:33 extracts of ragweed and grasses. On inquiry it was definitely ascertained that no local reactions of any kind resulted from these pollen injections. The early and violent symptoms in spite of such intensive pollen therapy, together with the lack of any local reaction, aroused the suspicion that we were not treating the patient with the causal antigen. The records at the clinic showed negative skin tests to pollen. The previous season she had been given pollen treatments by a competent allergist with no benefit, although it is claimed that positive skin tests to pollen were obtained. Closer inquiry revealed the fact that her hay fever and asthma season was from April to November or December, with slight symptoms the rest of the year. Her maximum suffering was in July, August and September. These symptoms had been present for twenty-one years.

Fungi were suspected as a possible cause of her trouble and tests made showed very marked reactions, particularly with *Alternaria* and *Aspergillus*. Pollen reactions were entirely negative. Pollen treatment was discontinued and mold desensitization was begun. Marked local reactions were evident from the start and on two or three occasions sharp attacks of asthma occurred about twenty to thirty minutes after the injection. Treatment was continued through 1935 with at least 75 per cent relief. She says that it was the best summer she had ever had. She was not entirely symptom free, however, and close observation during the summer revealed the fact that her bad days coincided with marked increase in the mold spore content of the air.

CASE 29.—John B., aged 28, was seen July 13, 1934, with a history of typical hay fever symptoms of nine years' duration. His season was from April to October and at no time did he have symptoms in the winter except for one February, when he was in Cuba. August and September were his worst months. The previous summer he had had some sensitization tests, with negative results. Complete pollen tests made by us were entirely negative. This was followed by intradermal and conjunctival tests, which were also negative. Pollen allergy was definitely excluded. The patient was then tested with all possible allergens to which he might be exposed. A positive reaction to tobacco in no way explained the clinical picture. A one plus reaction was obtained to *Alternaria* by scratch test and a four plus reaction to a 1:10,000 intradermal solution. This was repeatedly confirmed. He was treated from April 13, 1935, to the fall of that year with an extract of *Alternaria*. Although the treatments were not very regular and the maximum dose not high, he estimates about 75 per cent improvement. His worst period was toward the end of July, when there was practically no pollen; at the same time it was the maximum period for the *Alternaria* count.

CASE 39.—Jack M., aged 8 years, was seen July 26, 1934, with the complaint of hay fever of four years' duration. The mother stated that his symptoms occurred from April until frost. A few days prior to his first visit he had had slight asthma. There were no symptoms in winter. Four years ago he had a tonsillectomy-adenoidectomy, which did not relieve his hay fever symptoms. The only member of the family known to have allergy was a great aunt who had asthma.

The nasal mucosa was typically allergic in appearance. The remainder of the physical examination was entirely negative. Cutaneous tests with a comprehensive assortment of allergenic extracts showed strong positive reactions to ragweed pollen, *Alternaria* and dust. There were no definite reactions to any of the other pollens or other variety of allergens. The fall hay fever could, of course, be explained on the basis of ragweed sensitiveness. The earlier symptoms and the marked symptoms in the latter part of July when practically no pollen was in the air constituted presumptive evidence for the fungi (*Alternaria*) as a cause. Treatment was begun with ragweed and *Alternaria* extract, one injection being given in each arm at every visit. His symptoms improved somewhat during the fall of 1934. His treatment was continued perennally. During the spring of 1935 he was improved. In July he began to have some moderate systemic reactions from the injections. By alternating the pollen and mold treatment at each visit it was found that the latter was responsible for the reactions. The dose was then reduced. The greater amount of hay fever symptoms occurred during the latter part of July. He had practically no discomfort the rest of the season. The mother

11. Since this paper was written, fourteen additional patients of this series have been treated with approximately the same results as recorded above.

estimates that there was at least 75 per cent relief. The evidence for the mold etiology in this patient, who is typical of many others, may be summed up as follows: the history of the early "season" without the corresponding pollen reactions; the positive skin tests to fungi; the clinical observation of increased symptoms during the time when the air was heavily contaminated with spores but practically free from pollen; systemic reactions from injections of mold extracts; the satisfactory results following desensitization to these fungi.

## SUMMARY

1. The ever present spores of fungi in the air are common causes of respiratory allergy.
2. A great tendency exists for many of the mold-sensitive patients to assume a seasonal character in their symptomatology because of the greater prevalence of mold spores in the warm months.
3. The evidence for the etiologic factor of molds in the group discussed consists of positive skin and passive transfer tests, the history of a "season" which is not in entire conformity with the pollen reactions, the clinical observation of the patients and comparison of their symptoms with reference to daily pollen and mold counts, the failures in pollen treatment, and the good results and a few systemic reactions with mold desensitization.
4. This group constitutes such a definite unit that with some experience most of these patients can be catalogued before sensitization tests are made.
5. Of twenty-eight patients treated by specific mold desensitization and observed during at least one season, twenty-three obtained satisfactory results.
6. The conclusion cannot be escaped that seasonal hay fever and asthma due to molds is a definite and important allergic entity, second in importance only to pollen disease.

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## ABSTRACT OF DISCUSSION

DR. HENRY C. SWEANY, Chicago: Did you ever observe any of your patients leave the environment of some particular mold and become cured spontaneously?

DR. GEORGE R. HERMANN, Galveston, Texas: Similar studies have been carried out in Galveston by Prince, Selle and others working along these lines. They have observed that there was a difference in the mold content in the atmosphere in connection with variations of the winds. With the drop of the tide and the lowered water level in the swamps about Galveston island the molds multiplied on the exposed water soaked vegetations and then dried. Then certain winds, principally from north easterly directions, whipped them off and carried them over the island and the mold count rose very high. During such times the patients who had apparently become sensitive to the mold antigen responded to the high content of mold. Skin tests were made and desensitization was carried out and reported.

DR. SAMUEL M. FLYNN, Chicago: I believe your question was whether I have noticed any of these patients having relief from symptoms in other parts of the country.

DR. SWEANY: Going out of the environment of the particular mold.

DR. FEINBERG: Let me explain that these studies were made in an outdoor atmosphere; these do not represent studies on particular environments of particular patients.

DR. SWEANY: What I meant was going to the Pacific Coast.

DR. FEINBERG: I have noticed some variations. For instance, I have one patient now in Tucson who is free at the present time, although she had trouble in Chicago at this time of the year. I have not made any studies of the air in Tucson. I don't know what the difference is. I suspect that there is a difference.

## GIANT CELL BONE TUMOR

## FURTHER OBSERVATIONS ON TREATMENT

CARLETON B. PEIRCE, M.D.

AND

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In previous papers, one of us<sup>1</sup> has presented the experience at the University Hospital with giant cell bone tumor during the period from 1923 to 1931. To codify further that experience as a guide in the management of this lesion, the methods used and the results accomplished have been surveyed again in the same group of patients and in an additional number under observation in the department of roentgenology since that time.

The current series reported includes eighteen of the previous group and twenty-two additional cases, a total of forty. Although errors in diagnosis of giant cell bone tumor may be made from the roentgenographic examination, in the large majority of cases the film evidence should be sufficient for diagnosis. In twenty-five of these, biopsy or a surgical specimen has afforded

TABLE 1.—Untreated Cases

	Age of Case	Location of Tumor	Reason for No Treatment	Biopsy or Surgical Specimen	Subsequent History
1	14	Intertrochanteric area of femur	Treatment refused by parents	+	Subsequent increase in size of tumor; irradiation and surgical treatment elsewhere; microscopic confirmation of diagnosis; no later report
2	49	Seventh rib	Incidental finding; no symptoms	0	No report
3	29	Ilium, posterior inferior spine	No symptoms	0	No subsequent visit
4	14	Femur, subtrochanteric	Treatment refused by parent	0	Progressive increase in size 24 months later; treatment again refused
5	3	Humerus; proximal metaphysis	Treatment refused by parent	0	No report

microscopic proof of the roentgen diagnosis. The other sixteen are typical in roentgenographic appearance and are in accord with those proved by histologic examination.

## METHODS OF TREATMENT

Since the advent of roentgen therapy, some controversy has prevailed between the proponents of surgery and those in favor of irradiation. Others believe that a combination of the two is to be preferred. Surgical attack with chemical cauterization has been utilized with considerable success. Extirpation of the involved area by resection or excision has been advocated.

It will be observed in the tabulated cases (tables 1 to 5 inclusive) that the method of management in our clinic has varied in the same degree as is suggested severally by the articles in the literature. A general

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Read before the Section on Radiology at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 15, 1936.

1. Peirce, C. B.: Giant Cell Bone Tumor: A Consideration of the Morphology of This Neoplasm, the Response to Surgical and Radiation Therapy, and Report in Detail of Two Apparently Malignant Cases. *Am. J. Roentgenol.* 28: 167-188 (Aug.) 1932; Giant Cell Bone Tumor: Some Considerations of Treatment. *Radiology* 21: 348-351 (Oct.) 1933; Giant-Cell Bone Tumor. *Am. J. Roentgenol.* 30: 604-606 (Nov.) 1933.

grouping, however, can be made into (1) untreated or those treated (2) by surgical methods plus pre-operative and postoperative irradiation, (3) by surgery and postoperative irradiation, (4) by surgery only and (5) by irradiation only.

## TREATED CASES

In any evaluation of the result of treatment, several factors relative to the condition at the time of origin of treatment must be carefully weighed; namely, the extent of the lesion, the location in an essential skeletal

TABLE 2.—*Preoperative Irradiation, Surgery, Postoperative Irradiation*

Case	Age	Location of Tumor	Preoperative Irradiation	Character of Surgical Attack	Biopsy or Surgical Specimen	Postoperative Irradiation	Result	Time Interval at Last Report Since Origin of Treatment
6	34	Femur, distal	125 roentgens 2 weeks	Curettage and acriflavine	+	Multiple small doses	Clinically well	3 years
7	36	Ulna, distal	200 roentgens aa 2 ports, 1 mo.	Curettage only	+	Multiple small doses 75-125 roentgens aa 2 ports monthly for 16 mo.	Excision for increase in size at 12 mos.; good function; no recurrence at 8 yrs.	8 years
8	21	Fibula, proximal	Single small dose 125 roentgens aa anterior + posterior, 1 mo.	Excision 4 mos.	+	Multiple small doses 100 roentgens 1 mo. 100 roentgens 3 mo.	No recurrence (now under treatment for pulmonary tuberculosis)	5½ years
9	22	Tibia, head	150 roentgens aa 3 ports, 1 mo.; 150 roentgens, 1 port, 1 week	Curettage and bone chips (lysis of chips and recurrence of tumor at 4 mos.)	+	Multiple large doses 1,850 roentgens in 3 weeks beginning 9 mos.	Amputation 2 years later	5 years
10	24	Femur, intertrochanteric	350 roentgens aa 2 ports, 1 week	Saucerization, bone graft and bone chips	+	Periodic large doses 2 x 400 roentgens monthly for 4 mos. beginning 1 mo.	Persistent cystic areas; good function	9 mos.
11	17	Tenth rib (malignant change)	4 x 150 roentgens, 1 port	Excision	+	.....	Postoperative cardiac death	
12	15	Tibia, proximal (secondarily infected with inguinal adenopathy on admission)	800 roentgens aa 4 ports, 1 mo.	Saucerization	+	600 roentgens aa 4 ports at 2½ mos., 400 roentgens aa 4 ports at 6½ mos.	Flexion deformity of knee; equinus position of foot; subcutaneous fibrosis	3 years
13	33	Tibia, proximal	Periodic, large, 400-600 roentgens aa 4 ports, monthly for 4 mos.	Excision elsewhere (microscopic diagnosis of giant cell tumor)	+	No report	No report	9 mos.

TABLE 3.—*Surgery and Postoperative Irradiation*

Case	Age	Location of Tumor	Character of Surgical Attack	Biopsy or Surgical Specimen	Irradiation	Result	Time Interval at Last Report Since Origin of Treatment
14	11	Humerus, proximal metaphysis	Curettage only	+	Single large dose, 500 aa 3 ports	Excellent with bone repair; function good	4½ years
15	15	Humerus, distal	Curettage and bone chips	+	Periodic large doses, 400-500 roentgens aa 2 ports x 7, bimonthly	Early resorption of bone chips; later increase in size of tumor; excision at 22 months	22 months
16	11	Femur, intertrochanteric	Curettage and acriflavine	+	Multiple small doses	Clinically well	3 years
17	4	Ulna, distal metaphysis	Curettage and acriflavine	+	(Multiple small) treatment elsewhere	Clinically well; anatomic repair	11 months
18	15	Ulna, distal metaphysis	Curettage and phenol	+	Multiple small doses	Clinically well	25 months
19	27	Thoracic vertebra II	Laminectomy	+	Treated elsewhere; multiple small doses	No disability; returned to work	3 years
20	25	Thoracic vertebra XII	Laminectomy	+	Periodic large doses, 600 roentgens aa 2 ports x 2 three month intervals	Partial residual palsy due to permanent damage to cord before admission; no increase in size; recalcification; good functional result	3 years
21	38	Humerus, proximal ½	Operation elsewhere twice; apparent ultimate resection, secondary infection	+	X-ray saturation series elsewhere	Gross defect in humerus; no apparent tumor; disability	21 months
22	42	Tibial head	Operation elsewhere; secondary infection	+	X-ray and radium elsewhere; data not obtainable	Persistent tumor with osteomyelitis; gross defect in skin	3 years

## UNTREATED CASES

In the entire series of forty patients, five were not treated for the giant cell tumors found (table 1). The parents of three of these refused treatment of any type, one later permitting the child to be treated by surgery and irradiation elsewhere as the symptoms increased. Two cases presented the tumor as an incidental finding without symptoms.

part or weight bearing area, the character of previous treatment not subject to the observer's control, or secondary infection. Without fairly complete information on these items an attempt to evaluate results will be fruitless, regardless of the number of cases in the series.

The number of individuals in each group of this series is small; hence percentage values are not

markedly significant. The major criteria must be the effect on the lesion in the nature of cessation of further growth, degree of bone repair, impairment or improvement of function and either ultimate retention of the affected part with safety or its excision.

TABLE 4.—Surgical Treatment Only

Case	Age	Location of Tumor	Character of Surgical Attack	Biopsy or Surgical Specimen	Result	Time Interval at Last Report Since Origin of Treatment
23	18	Fibula, head	Excision	+	No report after discharge	Clinically well 1 month
24	7	Femur, intertrochanteric	Curettage and bone chips	+	Persistent cystic areas; minimal improvement; no disability	3 years
25	18	Femur, intertrochanteric	Curettage and bone chips	+	Persistent cystic areas; good functional result	2 years
26	14	Femur, distal metaphysis	Curettage, electrocautery, bone chips and graft	+	Persistent cystic areas; apparent repair in other areas	26 months

In this series we shall speak of "excision" as the removal of the affected part of the bone *en masse*, "curettage" or "saucerization" as the removal of the

tion therapy "multiple small treatments" commonly means from 75 to 125 roentgens through several ports repeatedly over a certain length of time; "periodic large doses" means from 300 to 600 roentgens through several ports repeated at longer intervals, the x-radiation being generated at 140 or 200 kilovolt peak.

*Surgery with Preoperative and Postoperative Irradiation* (table 2).—Eight cases were subjected to preoperative irradiation. In but one of these can the preoperative irradiation be considered to have had an opportunity to become effective before surgical intervention.

Of the group only one (case 6) may be considered to have a satisfactory result. The preoperative irradiation was minimal and was given but two weeks before curettage and chemical cauterization. Patient 10, with an intertrochanteric involvement of the femur, received preoperative irradiation only one week before saucerization. This cannot be considered a marked factor in the result. Both patients received methodical postoperative irradiation, one with multiple small doses, one with periodic large doses. The functional result in both has been good.

Patient 12 had been secondarily infected and presented inguinal adenopathy on admission. In this case large periodic irradiation (malignant change suspected) has contributed, we believe, to scar tissue contraction

TABLE 5.—Treatment with X-Rays Only

Case	Age	Location of Tumor	Character of Radiation Therapy	Biopsy or Surgical Specimen	Result	Interval of Last Report Since Origin of Treatment
Multiple Small Doses						
27	8	Femur, intertrochanteric	Multiple small doses.....	0	Improved calcification; no disability; no growth of tumor	11 months
28	37	Radius, distal	Multiple small doses.....	0	Clinically well; ossification of tumor	3 years
29	21	Radius, distal	Multiple small doses (75-125 roentgens biweekly to bimonthly over a long period)	0	Clinically well; ossification of tumor	5 years
30	18	Thoracic vertebra XII	Multiple small doses.....	+	Clinically well; ossification of tumor	8 years
31	16	Fibula, head	Multiple small doses.....	0	Clinically well; ossification of tumor	11 years
Periodic Large Doses						
32	4	Humerus proximal metaphysis	200-250 roentgens $\bar{a}\bar{a}$ 3 ports monthly to bimonthly $\times 7$	0	Progressive ossification; no disability; clinically well	2 years
33	7	Humerus proximal metaphysis	350 roentgens $\bar{a}\bar{a}$ 3 ports bimonthly $\times 3$	0	Progressive ossification; clinically well	12 months
34	11	Femur, intertrochanteric	350-500 roentgens $\bar{a}\bar{a}$ 3 ports bimonthly $\times 3$	0	Increased calcification, loss of pain and limp; clinically well	7 months
35	18	Femur, distal	500-600 roentgens $\bar{a}\bar{a}$ 4 ports bimonthly $\times 4$	0	Ossification in tumor; loss of pain; peroneal palsy	20 months
36	31	Femur, distal	400-500 roentgens $\bar{a}\bar{a}$ 4 ports 1-3 months intervals $\times 4$	0	No change in tumor; recurrence of pain last visit	3 years
37	44	Thoracic vertebra X	500 roentgens $\bar{a}\bar{a}$ 2 ports monthly for 4 months	0	Moderate ossification; loss of symptoms; clinically well	17 months
38	13	Lumbar vertebra V	650 roentgens $\bar{a}\bar{a}$ 3 ports monthly for 4 months	0	Progressive ossification; loss of symptoms; clinically well	22 months
39	33	Tibia, head	400-600 roentgens $\bar{a}\bar{a}$ 4 ports bimonthly $\times 4$	+	Excision elsewhere 6 weeks after last dose	9 months
Palliative Treatment						
40	7	Humerus, proximal metaphysis	400 roentgens $\bar{a}\bar{a}$ 3 ports	0	No subsequent report	
40	45	Ischium and ilium	3 $\times$ 150 roentgens $\bar{a}\bar{a}$ anterior and posterior right pelvis; 4 $\times$ 75 roentgens chest (metastasis)	+	Relief of pain in pelvis; death 8 months later	

affected portion of the bone by a curet or similar instrument, the unaffected shell being left. In general, "excision" is to be regarded as unfavorable, in that it removes a portion of the supportive framework of an extremity and is used relatively as a means of last resort to eradicate the tumor. We admit that excision may be the method of choice in certain cases but do not feel that it is necessary in the majority. In radi-

about the knee, which, coupled with the osteomyelitis present on admission, has not permitted a satisfactory result.

The other five have resulted in excision or amputation, one showing malignant change (case 11).

In this group, therefore, the methods of management have varied widely, and the results cannot be considered to favor either irradiation or surgery.

*Surgery and Postoperative Irradiation* (table 3).—The nine cases in this group include two patients who had been operated on and subjected elsewhere to irradiation with x-rays or irradiation with x-rays and radium. One of these patients no longer has a tumor but has lost the proximal third of the humerus with a resultant flail shoulder. The other patient still has some tumor in the tibia with secondary infection. They

excision. This was a patient of low mental development in whom excision of the fibular head was considered the method of choice.

The other three have shown a good result with curettage and bone chips, or with curettage and electrocauterization followed by bone chips and graft. All three show persistent cystic areas in the operative field. The functional result has been good.

*X-Irradiation Only* (table 5).—The group that received irradiation includes only fifteen cases. From this total two patients must be deleted, one to whom radiation was given only as a palliative measure for relief of pain and in whom the ischial tumor showed malignant change after having been present for fourteen years (case 40), and the second for lack of further information (case 39).

Patient 13 was subjected to an excision elsewhere, six weeks after the last irradiation. The reason for this surgical intervention is unknown.

The remaining twelve have shown good results with loss of symptoms, cessation of growth of the tumor, and recalcification in the tumor area. One (patient 36) complained of recurrence of pain at the last visit without x-ray evidence of change in the tumor. Another (patient 35) has some subcutaneous fibrosis in the popliteal area and a peroneal palsy. The contributory effect of the larger doses of radiation as a factor in the production of fibrosis in the deeper connective tissues in this case may be questioned in view of the fact that the postirradiation skin changes are minimal.

We may then consider that ten of the twelve subjected to radiation treatment only have shown good results (83.3 per cent of the immediate group).

It is of interest that half of these ten have received multiple small doses of from 75 to 125 roentgens frequently over a period of time, and the other half periodic large doses at less frequent intervals. In a comparable elapsed time, no significant variation in response has been observed. Under both methods the symptoms have disappeared, growth of the tumor has ceased, and moderate ossification within the tumor has ensued. On the other hand, the two patients in this group who have shown unfavorable results had received

have not been subjected to irradiation in this department. They may be considered as unfortunate examples of the result of multiple modes of attack and of the effect of secondary infection.

A third (case 15) showed an early resorption of bone chips introduced at the time of curettage and later a recurrence in activity and growth of the tumor while still under roentgen therapy, requiring subsequent excision.

The remaining six are regarded as showing good to excellent results. (These constitute, in analysis, 86 per cent of their group, since the first two discussed should not be included in an evaluation of this method of treatment.)

Five of the patients are clinically well from eleven months to four and one-half years since the origin of treatment. The sixth patient (20) had considerable cord damage on admission, and some residuum must be expected. The functional and symptomatic result is good.

Four of these six patients received multiple small doses (from 75 to 125 roentgens, biweekly or bimonthly) over a considerable length of time, one a single large treatment (500 roentgens each through three ports), and the sixth periodic large amounts (600 roentgens each through two ports at two three-month intervals). It should further be observed that in three of these favorable cases a chemical cauterant was employed by the surgeon in addition to the curettage of the evident tumor area.

*Surgery Only* (table 4).—One of the four patients who received surgery only was subjected to a primary

TABLE 6.—Summary of Results of Treatment

Method of Treatment	Total Number of Cases	Results			
		Satisfactory	Unsatisfactory	Palliative Only	Unknown
(a) Untreated.....	5	..	3	..	2
(b) Surgery with preoperative and postoperative irradiation.....	8	2	6	..	..
Curettage or saucerization.....	(2)		(2)		
Curettage and chemical cauterization.....	(1)	(1)			
Curettage and bone chips or graft.....	(2)	(1)	(1)		
Excision.....	(3)		(3)		
(c) Surgery with postoperative irradiation.....	9	6	3	..	..
Curettage.....	(1)	(1)			
Curettage and chemical cauterization.....	(3)	(3)			
Curettage and bone chips.....	(1)		(1)		
Laminectomy.....	(2)	(2)			
Operated and treated elsewhere.....	(2)		(2)		
(d) Surgery only.....	4	3	1	..	..
Curettage and bone chips.....	(2)	(2)			
Curettage, electrocautery, chips and graft.....	(1)	(1)			
Primary excision.....	(1)		(1)		
(e) Irradiation only.....	15	10	2	1	2
Multiple small doses.....	(5)	(5)			
Periodic large doses.....	(8)	(5)	(2)		(1)
Palliative.....	(2)			(1)	(1)
Total.....	41	21	15	1	4

TABLE 7.—Summary (Corrected for Extraneous Factors)

Method of Treatment	Total Number of Cases	Results		Discarded Because of Extraneous Factors
		Satisfactory	Unsatisfactory	
Surgery with preoperative and postoperative irradiation.....	8 (5)	2 (40%)	3 (60%)	3
Surgery with postoperative irradiation.....	9 (7)	6 (85%)	1 (15%)	2
Surgery only.....	4 (3)	3 (100%)	.....	1
Irradiation only.....	15	10 (83.3%)	2 (16.7%)	3
	(27)	21 (77.7%)		

periodic large doses of radiation. These may represent the normal morbidity rather than demonstrate a specific character of response.

Logically, therefore, we cannot hold a particular brief for either method of irradiation. It is our opinion that the initial reaction of apparent lysis is more marked in the patients subjected to the larger doses. Further, the experience with one patient suggests the inadvisability of large doses of radiation because of possible damage to the deeper connective tissue.

COMMENT

A recapitulation of the results obtained by these several methods, which reflects in a measure the general lack of uniformity in treatment of giant cell bone tumors, is shown in table 6.

However, with the several cases deleted for the causes discussed in each of these groups, the distribution shifts somewhat as indicated in table 7.

With such an analysis it is evident that with thorough curettage, surgery alone is effective in the control of this tumorous lesion of bone. Contrary to our previously expressed belief, adequate curettage with or without cauterization has been as effective as curettage with irradiation.

There are those cases in which the location of the tumor, the age or physical condition of the patient, or the loss of occupational time incident on surgical attack are real factors in the life of the patient. In these, irradiation offers symptomatic relief and anatomic improvement.

Further, irradiation alone offers as much for the control or cure of giant cell tumor as either of the other methods. The comparison of surgery alone as of 100 per cent is a fallacy in so small a group of cases.

As to the method of irradiation, our immediate tabulation suggests little choice. The character of the response of giant cell tumor to irradiation continues to substantiate the belief that the growth restraint induced is specific for the giant cell, and that giant cell tumor is essentially not a true neoplasm. Hence large or massive doses are theoretically of less value than smaller and more frequent amounts of radiation and may tend to be more irritating to the normal connective tissue elements.

Cessation of increase in size of lesion and disappearance of symptoms should be considered as an indication of favorable response, although reparative changes in the involved bone are not apparent for some time

CONCLUSION

1. Lack of uniformity in the treatment of giant cell tumor by combined surgical and radiation methods defeats any attempt at satisfactory comparative analysis.
2. Preoperative irradiation has been permitted little opportunity for effect and has been urged on the radiologist largely in those cases which are unfavorable at the outset.
3. Secondary infection subsequent to primary surgical intervention or biopsy offers definite obstruction to improvement by irradiation.
4. Adequate curettage has induced good functional results in anatomically accessible areas.
5. Either adequate treatment with x-rays or adequate surgical intervention offers as much as a combination of the two.
6. Conservative treatment with x-rays will afford symptomatic relief and induce anatomic repair.

"Acid and Alkali Forming Foods."—The scientific evidence indicates, therefore, that the question of acid and alkali forming foods is a negligible problem in human dietetics. "It is still an open question," wrote Sherman (in 1932), "whether the acid base balance of the mineral elements of the diet is or is not of practical significance in human nutrition." Evidence showing the relative unimportance of the effects of acid ash and alkaline ash foods has been ably summarized in the Report of the Committee on Nutritional Problems of the American Public Health Association for 1935-1936. —Tobey, J. A.: The Question of Acid and Alkali Forming Foods, *Am. J. Pub. Health* 26:1113 (Nov.) 1936.

MULTIPLE POLYPOSIS OF COLON

FAMILIAL FACTOR AND MALIGNANT TENDENCY

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Multiple polyposis in recent years has been recognized as a distinct disease. This, together with the growing knowledge of the hereditary factor and high percentage of deaths from malignant degeneration, has been responsible for general interest in its study.

After diagnosing a case of multiple polyposis I have undertaken to locate and examine all the members of that family group in an effort to determine how many of them were similarly afflicted. This paper represents the result. It is not, however, intended as an exhaustive review of the subject.

Multiple polyposis, or adenomas, of the colon can, following the classification of Erdmann and Morris,<sup>1</sup> well be divided into two classes: the first, the acquired or adult type, the result of some form of irritation, and the second, the adolescent (congenital, disseminated type) characterized by familial tendency and probably, in some cases at least, congenital.

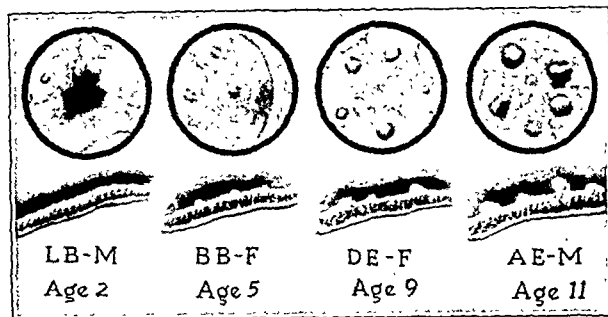


Fig. 1.—Comparative size of adenomas in four children of one family, aged 2, 5, 9 and 11. As there is an average difference of two and three-fourths years in the ages and so nearly a like amount of growth for each period, it suggests congenital origin in the 2 year old and hence in all.

The acquired type is found when there is chronic irritation. Such polypi formed from the loosened edges of ulcers are often seen as a late stage of ulcerative colitis, hyperplastic tuberculosis and stricture.

Polypi of this type are irregular in size and shape, are scattered, and are few in number as compared with the other type. The diagnosis of the irritation that preceded them and the fact that they occur later in life differentiate this class from the adolescent type.

Only the adolescent type is being considered in this paper. It is observed in infancy and early life and may involve members of several generations of the same family. The distribution of the polypi is throughout the entire colon, and they may displace the normal mucosa. There is a history of frequent bowel movements, from two to six a day, often for a number of years without any apparent ill effect, but sooner or later there is blood and mucus in the stools with increased frequency and abdominal pains, due to an exaggeration of the disease itself or to a superimposed malignant condition.

Both types predispose to malignant degeneration, the incidence varying from 40 per cent upward. In my series it is 33 1/3 per cent (table 5).

Read before the Section on Gastro-Enterology and Proctology at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 13, 1936.  
1. Erdmann, J. F., and Morris, J. H.: Surg., Gynec. & Obst. 40: 460 (April) 1925

## DIAGNOSIS

By means of a digital examination it is possible to gain the first impression that the case is one of multiple polyposis. As the adenomas usually appear first in the pelvic colon and rectum, they can readily be seen through the sigmoidoscope. With the more general use of this instrument and x-rays the diagnosis of such cases has become more common, whereas previously



Fig. 2 (J. C., group A, aged 21).—Characteristic mottling due to adenomas protruding into lumen and preventing uniform distribution of the opaque clysmia.

discovery was made only at autopsy or on excision of a portion of the colon for some other condition.

Despite the diagnosis of polyposis with the sigmoidoscope and x-rays, as routine procedures of the careful diagnostician, still many such cases are treated as colitis and most are diagnosed only after the appearance of the more urgent symptoms consequent on malignant change.

If a case of polyposis or polyposis with malignant change is discovered, early examination of other members of the family group may locate additional cases before serious symptoms arise.

Immature adenomas, in the form of tiny spots, 1 cm. in diameter and just ready to break through the apparently normal mucosa, can usually be found between the visible polypi. (In L. B. in figure 1 an immature adenoma is shown as a light spot near the bottom and slightly to the right.) This condition exists chiefly in those under 16 years of age. These are described by Fansler as "simply a little bulge of the mucosa as though there were a foreign body lying under it." Such forms must be searched for in infants and younger children, for only in this way is it possible to make an early diagnosis. My experience is that, with a clean mucosa and a light at the distal end of the sigmoidoscope, it is possible to focus it so as to throw its rays across the mucosa and thereby bring into relief these very small forms. The magnifying lens attachment for the sigmoidoscope may be helpful but is rarely needed. All suspicious polypi should be removed for pathologic study.

The x-rays are necessary for making a diagnosis of polypi higher than the limits of sigmoidoscopic inspection. For this condition, double contrast mediums, a barium sulfate enema, followed after its expulsion by air inflation, unmistakably constitute the most efficient method for demonstration of adenomas. Although polypi are usually most abundant in the lower part of the bowel, the roentgenogram would seem to indicate, in some cases at least, that the greatest number are in the proximal portion of the colon. A roentgenogram should be made in every case because of the possibility of carcinoma.

This study was further prompted by the hope that, with earlier diagnoses, some treatment might be found, before malignant change took place, to save some of these unfortunates from an early death.

## GROUP STUDY

With the familial tendency in mind, five cases presenting polyposis were selected for group study but in only two was it possible to get in contact with relatives in sufficient number to warrant a report. Some subjects who may be afflicted refused examination; others, examined early in the period of study, which began in 1930, may since have developed the disease, so that the figures I am to present may fall short of the actual number. Some were afraid to have an examination, stating that if they had the disease and knew it they would have that much more to worry about. They defended their stand by referring to some of their relatives who died even after a diagnosis had been made. Another argument against examination was that they did not want their children to bear the stigma that would result from their companions knowing of their affliction.



Fig. 3.—The same colon seen in figure 2; adenoma cecum to anus. Malignant degeneration of adenoma near splenic flexure was cause of death. Note absence of adenomas in pelvic colon and rectum, removed through the sigmoidoscope in preparation for colectomy.

## GROUP A

In the first group, which I shall henceforth speak of as group A, all were Italians; some spoke no English and were suspicious of the motive behind my desire to make an examination, so refused it. This group lived within 50 miles of Buffalo, some in Canada and the rest in the United States, but, on account of the depression and unemployment, few had the means to come

or examination; neither could they afford to pay for hospitalization. Some of them, however, were most cooperative and helpful in getting the others in for examination.

Individuals and hospital records were examined and in one case a history was obtained from relatives. In this way three generations were covered.

The father of a family of six children, who came to America, died at the age of 47 in Italy of "bowel trouble." His children said he had continuous loose stools preceding death, pointing strongly toward polyposis, carcinoma or both. He alone represented the first generation. His children represented the second generation of the group (table 1).

The first seen in group A was J. C., one of the six children, a woman, aged 21, who had multiple polyposis and died of a carcinoma near the splenic flexure. With this one as a nucleus the study of the group began. Three others in this family of six had polyposis. One, a brother, dying with rectal carcinoma, a sister probably with carcinoma and the third, a brother, is still alive. A sister died at 30 of rectal carcinoma, and one is still alive, free of the disease.

There were eight children in the third generation, two of whom have multiple polyposis.

Of fifteen persons in group A, I examined thirteen. The hospital records of another, who had died, were

TABLE 1.—Incidence of Multiple Polyposis and Carcinoma in Family Group A

Group A: N. F.-♂; 47; ???; Died 47									
S.F. ♂ 42 (MP)-C Died 44	F.M. ♀ 38 (MP) Died 41	A.C. ♀ 30 C Died 30	M.P. ♀ 27	J.C. ♀ 21 (MP)-C Died 24	S.F. ♂ 20 (MP)				
N.F. ♂ 10 (MP)	F.F. ♀ 8	E.F. ♀ 6	F.M. ♀ 16 (MP)	G.C. ♂ 11	S.C. ♂ 7	L.C. ♂ 5	R.A.C. ♀ 2		

Key to tables 1 and 3: S. F. ♂ or ♀, initials, sex; 42, patient's age at examination or on records; (MP)-C, multiple polyposis and carcinoma; Died 44, age at death; (MP), multiple polyposis; ?, needs watching; ???, history; M.P., Care? or both?

TABLE 2.—Clinical Histories in Group A

40% had polyposis	
33% of the M.P. patients died of carcinoma	
Members of family group.....	15
Examined.....	13
Dead, records studied.....	1
Dead, history from family.....	1
Multiple polyposis.....	6
Ages: 10, 16, 20, 21, 35, 42	
Average age: 24.5	
Males.....	4
Females.....	2
Of these:	
Dead, carcinoma, ages: 24, 44.....	2
Dead, clinical diagnosis carcinoma, age 41.....	1
Alive, ages 10, 16, 20.....	3

studied and a history of another was obtained from relatives. Six of the group, aged 10, 16, 20, 21, 38 and 42, four males and two females, had polyposis. Two of them died of rectal carcinoma at the ages of 24 and 44 and a third died with all the symptoms of carcinoma, while three, aged 10, 16 and 20, are still alive (table 1).

## GROUP B

The second family group, which I shall refer to as group B, were English speaking, representing three generations. They lived from 80 to 300 miles from Buffalo, in widely scattered areas on farms and in villages, and, like the previous group, practically all were indigent, so that it was necessary to drive hundreds of miles to search for them. It took about two years, much correspondence and solicitation by friends



Fig. 4.—Section of the colon seen in figure 3. The polypi are from 3 to 5 cm. in diameter with pedicles up to 3 cm. in length.

and other relatives in order to make the contacts. When found, it took time and often repeated trips to persuade some of them to consent to an examination. The first examinations had to be made, usually, without the slightest preparation of the persons to be examined, in their homes and always under most unsatisfactory conditions. Often subsequent examinations, as necessary, revealed polyposis where lack of preparation was responsible for failure previously.

Histories of any value, except in a few cases, were unobtainable, as parents of some of the children were dead or uninterested, and some of the children were being cared for by a welfare organization or by relatives who were scarcely able to care for themselves.

None, with two exceptions, could even afford to come to Buffalo for examination, and none could pay for hospitalization, so it was necessary to go for them and return them to their homes when through with them.

It took two years to locate twenty-eight members of this group. I examined twenty-five. Hospital records of three were studied and two of these had polyposis and carcinoma, while the third had one or both diseases.

A man, representing the first generation, died of polyposis and carcinoma of the rectum (table 3).

His seven children, three of whom are dead, represented the second generation. One of these three, M. B., a woman, the first seen in this group, had polyposis and died of carcinoma of the rectum forty-one days later, at the age of 29. Another, a woman, E. J. H., died of polyposis and carcinoma at the age of 21. A male died of "bowel trouble" suggestive of the two diseases.

In the third generation of twenty children, six have polyposis. At the time of their examination the other fourteen were free of the disease.

Nine members of group B, aged 2, 5, 9, 11, 11, 13, 21, 29 and 44, five males and four females, had polyposis. A tenth in all probability had it. Three of the members with polyposis, aged 21, 29 and 44, died of rectal carcinoma and six are still alive (tables 3 and 4).

Of the forty-three persons composing the two groups fifteen, or 37.7 per cent, had polyposis; five of these,

or 33⅓ per cent, have died of carcinoma. Two were males and three females. There are two, not included in these figures, who died of "bowel trouble" and a third of rectal carcinoma. If these three could be properly assigned, there is little doubt that the percentage of both the polyposis cases and deaths in cases of polyposis from carcinoma would be raised (table 5).

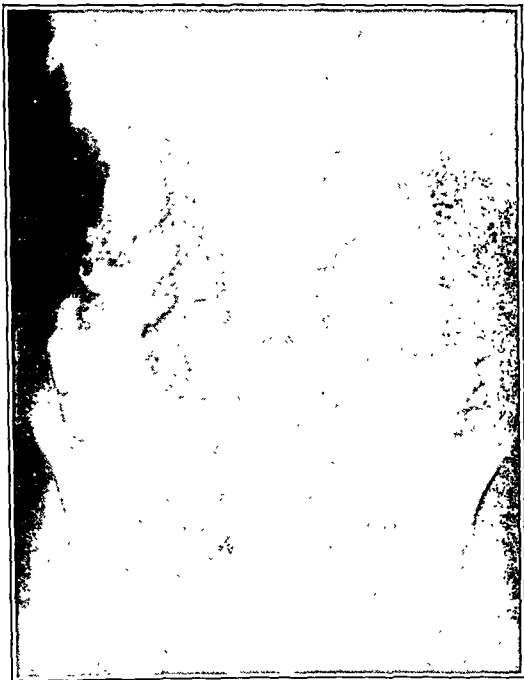


Fig. 5 (A. E., boy, aged 11, fig. 1, table 3).—Mottling of multiple polyposis.

The frequency of occurrence of multiple polyposis of the adolescent type, among the residents of a community, cannot be estimated with any degree of accuracy.

The number known at any one time could be increased if, when carcinoma of the colon is diagnosed, a careful study with the sigmoidoscope and the x-rays should be made for associated adenomas, both above and below the growth. If the case should prove to be one of polyposis, an exhaustive search of the relatives would no doubt reveal many more such cases and a reexamination every five years would add new cases, while other members would have died of carcinoma in the meantime.

Doering, as quoted by Dukes,<sup>2</sup> in a review of forty cases in his tabulation of ages proves that the disease is not congenital.

The age incidence in my study of fifteen cases is shown in table 7.

The youngest patient in my series is 2 years of age. He has two sisters aged 5 and 9 and a brother aged 11. A study of the adenomas in these four children, whose ages average two and three-fourths years apart, shows so nearly a similar amount of growth for each period that, in order for the adenomas to attain the size found in the 2 year old child, in my opinion they must have been present at birth and hence congenital. The same reasoning would apply in placing the three older children in the congenital class. In order, however, to prove conclusively that the disease is congenital, an examination would have to be made at birth. The artist

has made very faithful reproductions illustrating the sigmoidoscopic pictures of the adenomas in these four children (fig. 1).

The mother, M. B., of the four children just mentioned, all of whom had polyposis, was married twice, having two children by each husband. There was no history of the disease in either of her husbands or their families.

In my series of fifteen polyposis cases there were nine males and six females, a ratio of 3 to 2. Tables 1 and 3 illustrate well the hereditary or familial factor. There seems to be no fixed rule as to the transmission from one sex to the other.

TREATMENT

After I found the cases of polyposis, some asked what I was going to do about it. At once I realized that I had brought on myself a great responsibility. The problem was not easy to solve for several reasons. One was the difficulty of caring for people living so far from Buffalo and who were unable to pay for transportation or hospitalization even after they got there. The welfare organization refused to help, because many of the afflicted were apparently not ill and because they were being moved out of their own locality. Some refused surgical or any other form of treatment. As six of the patients with polyposis were 11 years of age or under, the question arose as to the advisability of doing surgery, necessarily radical.

In selected cases, because of the malignant tendency of polyposis, the best treatment is, without doubt, surgical, such as an ileostomy followed by excision of the whole colon, or the anastomosis of the distal end of the ileum into the lower pelvic colon at a point below which the polypi have been completely removed by fulguration (fig. 3). The colon, from the cecum to the point of anastomosis, is then excised.

TABLE 3.—Incidence of Multiple Polyposis and Carcinoma in Family Group B

Group B: A.C.H.-♂; 44; (MP)-C; Died 44									
C.E.H. ♂ 34 ???					Ra.H. ♂ 38				
Died 34									
L.H. ♂ 11 (MP)	M.M.H. ♂ 10	K.C.H. ♂ 7	G.H. ♀ 18	A.H. ♂ 17	I.H. ♀ 15 ?	G.H. ♂ 13 (MP)	F.H. ♂ 1		
Continued									
C.S.H. ♂ 36					Ru.H. ♂ 33 ?				
J.H.N. ♂ 10	M.E.H. ♂ 7	N.C.H. ♂ 4	R.L.H. ♂ 15	A.W.H. ♂ 13	B.A.H. ♂ 12				
Continued									
M.B. ♀ 29 (MP)-C Died 29					(Married to E. and B.)		L.I.H. ♀ 29	E.J.H. ♀ 21 (MP)-C Died 21	
A.E. ♂ 11 (MP)	D.E. ♀ 9 (MP)	B.B. ♂ 5 (MP)	L.B. ♂ 2 (MP)	A.D.H. ♀ 11	C.E.H. ♂ 7				

The difficulty of deciding whether a part or all of the colon is involved and just how much to remove, together with the technical difficulties of the operation, the uncertainty of complete removal and the dangers to the patient make a less radical procedure desirable, but, unfortunately, a satisfactory one has not been found.

2. Dukes, Cuthbert: Cancer Rev. 5: 241 (April) 1930.

Some success has been reported from the use of roentgen rays.<sup>3</sup> This treatment was also suggested by some features of success attained with it in one of my patients (A. K.) in whom the adenomas for 10 inches up were so close together that there was almost no normal mucosa visible. Roentgenograms showed the whole colon to be involved. He received two courses

TABLE 4.—Clinical Histories in Group B

32.14% had polyposis	
33½% of the M.P. patients died of carcinoma	
Members of family group.....	28
Examined .....	25
Dead, records studied.....	3
Multiple polyposis .....	9
Ages: 2, 5, 9, 11, 13, 21, 29, 44	
Average age: 16.1	
Males .....	5
Females .....	4
Of these:	
Dead, carcinoma, ages: 21, 29, 44.....	3
Alive, ages: 2, 5, 9, 11, 13.....	6

TABLE 5.—Summary of Groups A and B

37.7% had polyposis	
33½% of the M.P. patients died of carcinoma	
Members of the two family groups.....	43
Examined .....	38
Dead, records studied.....	4
Dead, history from family.....	1
Multiple polyposis .....	15
Ages: 2, 5, 9, 10, 11, 13, 16, 20, 21, 29, 38, 42, 44	
Average age: 19.5	
Males .....	9
Females .....	6
Of these:	
Dead, carcinoma, ages: 21, 24, 29, 44.....	5
Dead, suspected carcinoma, age 41.....	1
Alive, ages: 2, 5, 9, 10, 11, 13, 16, 20.....	9

TABLE 6.—Daering's Review of Forty Cases

Years	Cases
1-10.....	2
10-20.....	10
20-30.....	10
30-40.....	13
40-50.....	2
50-60.....	2
60-70.....	1

of treatments, totaling 5,500 roentgens. The adenomas turned dark red and black and disappeared. Later the patient died of an infected wound following an operation by a local surgeon for carcinoma, which was not found. One can only conjecture what might have been the result had no surgery been done.

Of the fifteen patients with polyposis, six are now dead. Two of them, A. C. H. and E. J. H., died of carcinoma of the rectum before my study began. One, M. B., died of carcinoma of the rectum forty-one days after diagnosis. S. F. died of carcinoma of the rectum, and F. M. died with the symptoms of carcinoma. Another, J. C., died of carcinoma of the splenic flexure.

Irradiation was employed for palliation in only three of the six patients who were very ill (S. F., F. M. and J. C.). The latter case (J. C., group A) was one of special interest:

A woman, aged 21, seen Oct. 30, 1930, had had abdominal cramps since the birth of her 6 year old child and for three months hourly stools with bloody mucus.

Many adenomas were seen in the rectum and pelvic colon and, by x-ray examination, throughout the colon (fig. 2). During

the latter part of 1930, through the sigmoidoscope, from the lower portion of the pelvic colon and the rectum most of the adenomas were removed, preparatory to doing a colectomy (fig. 3). Their removal caused a marked decrease in the number of bowel movements, and the bleeding stopped. In January 1931 she became pregnant with the birth, in October, of a child who is still living. During pregnancy the bowel movements increased, with more blood and mucus, and she became very anemic. She would countenance no treatment that might interrupt pregnancy and, because of her two small children, refused to submit to surgery.

From April 1932 to March 1933 she was given a total of 4,400 roentgens in divided doses. Following this, what few polypi were left in the lower portion of the pelvic colon and rectum disappeared. In the summer of 1932 it was very evident, however, that a malignant condition had developed and, with gradual emaciation, she died March 23, 1933, aged 24.

Autopsy revealed the liver studded and filled with metastatic nodules. The mucosa of the colon, especially the distal half, excepting the lower pelvic colon and rectum where they had been removed, exhibited many polypi, from 3 to 5 cm. in diameter with pedicles up to 3 cm. in length (figs. 3 and 4). Clinically carcinoma had been diagnosed but the initial lesion was not located until, after death, the examination of many adenomas of the colon located one near the splenic flexure, 2 by 2.5 cm., which infiltrated the bowel wall and proved to be malignant.

Of the nine patients with polyposis who were still alive, radiation treatment was given to six (L. B., B. B., D. E., A. E., L. H. and N. F.), aged in order 2, 5, 9, 10, 11 and 11 years (figs. 1 and 5, A. E., and 6, L. H.). A roentgenogram was not taken of L. B. and B. B. Limitation of space will not permit giving details of treatment. Since their last treatment I have seen only



Fig. 6 (L. H., boy aged 11, table 3).—Marked mottling of multiple polyposis.

two of the children: N. F., from whom all polypi in the lower part of the pelvic colon and the rectum but three had disappeared, and these I removed by fulguration; and L. H., presenting the severest case of polyposis of all, showing a 65 per cent improvement in the number of polypi, with marked improvement in his general health.

3. Personal communications to the author: Lewellys F. Barker, M.D., Baltimore, Oct. 4, 1930; George E. Binkley, M.D., New York, Nov. 24, 1934; John M. Rehfsch and L. Henry Garland, M.D., San Francisco, March 5, 1931, and Dudley Smith, M.D., San Francisco, Feb. 12, 1931.

Efforts were made in every case to shield the ovaries and testicles, despite the fact that, on account of the hereditary tendency of the disease, the wisdom of such precautions was questioned by practically all from whom I sought an opinion.

Admitting the difficulty and the possibility of error in carrying mental pictures of what one sees through the sigmoidoscope at one time for comparison with that seen at another time, when examinations are far apart,

TABLE 7.—Age Incidence of Groups A and B

Fifteen Multiple Polyposis Cases: Adolescent Type		
Years	Cases	Ages
1-10.....	4	2, 5, 9, 10
10-20.....	5	11, 11, 13, 16, 20
20-30.....	3	21, 21, 29
30-40.....	1	33
40-50.....	2	42, 44
Youngest.....		2
Oldest.....		44
Average age.....		19.5

I have tried not to see improvement unless it was there. For that reason my impressions do not sound very optimistic.

The results of roentgen treatments, as given, under such unsatisfactory conditions can be summed up as follows: After the initial irradiation sickness had ceased, the abdominal distress was relieved and the normal consistency of the stools usually returned, the blood disappeared and the patient's general health improved. In two patients aged 26 and 10 years, the polypi disappeared almost completely; in other patients there was a lessening in number. Favorable reaction to treatment was apparently more marked in cases in which the polypi were scattered than in those in which they were segregated, although here it was difficult to recognize the change so readily. In some cases the bowel became more tubular, the lumen diminished and the wall firmer, although more normal later.

About two thirds of the children from whom I received reports, following in some instances slight radiation sickness, slept well, had good appetites, never had to miss a day's attendance at school and felt better than before their treatments. They were all apparently improved, so far at least as their immediate health was concerned, but as for a cure no claim is made; neither is recommendation made for the employment of roentgen therapy until further evaluation is made.

461 Linwood Avenue.

#### ABSTRACT OF DISCUSSION

DR. JOHN J. CORBETT, Detroit: An immense task has been performed by Dr. McKenney in reaching and examining these families. He has called attention in a forcible manner to the hereditary tendency. Three cases that have been observed by me are interesting, first, because of the remarkable relief given to two of them through roentgen therapy; secondly, because in all a malignant condition developed later on. The possibility of relieving some of these patients by means of roentgen therapy for a period of time, instead of by radical surgery, should be kept in mind, and a guarded prognosis should always be made, because in most of them a malignant condition eventually develops.

DR. THOMAS E. JONES, Cleveland: Two facts are pretty well established: first, that this disease does have a hereditary tendency, and, second, that if these people live a normal span of life a malignant growth will develop in all of them. The treatment heretofore has been rather heroic, total colectomy and permanent ileostomy. An ileostomy in a young per-

son is rather a distressing situation. I should like to say a word about the surgical treatment of this disease, and I believe it offers one way out of a necessary total colectomy. A patient came under my observation in 1926, when she was 28 years of age. She had been advised to have a colectomy but refused it on account of having to have a permanent ileostomy. She was cachectic and had obstructive symptoms because the colon from the anal margin to the cecum was filled with polypi. I induced her to have a cecostomy, telling her I could close that at a later time when she recovered from the obstruction. She recovered in three months, and on proctoscopic examination the polypi were only about half the size they were originally. The edema had subsided. She was bleeding, however, and in order to temporize and to aid, I started to fulgurate the polypi. She came in every six or eight weeks, and I fulgurated fifteen or twenty polyps at a time. In 1930 I did an ileosigmoidostomy, and five months later I did the resection of the colon from just above the anastomosis around the cecum. She was alive and well four years afterward, without recurrence. In 1934 she was having one or two normal stools a day. I believe that with this method the four-year period can be cut down. A cecostomy first, for drainage, then fulguration of the polypi could possibly be completed in from four to six months, which would then also cut down the possibility of its becoming malignant before one completed the total removal of the colon from the point of anastomosis.

DR. DESCUM C. MCKENNEY, Buffalo: Of course some less radical treatment than surgery would be desirable, but unfortunately there is none available that is entirely satisfactory. In my files are a number of personal communications giving some favorable reports with the use of x-rays. My experience with such treatment is given in the latter part of the paper.

### DERMOID AND EPIDERMOID TUMORS (CHOLESTEATOMAS) OF CENTRAL NERVOUS SYSTEM

J. GRAFTON LOVE, M.D.

AND

JAMES W. KERNOHAN, M.D.

ROCHESTER, MINN.

This report is based on a clinical, surgical and pathologic study of fifteen congenital epithelial tumors (epidermoids, dermoids, pearly tumors and cholesteatomas) of the central nervous system that have been verified microscopically at the Mayo Clinic. Fourteen of the fifteen patients who harbored these tumors were operated on by the members of the neurosurgical staff of the clinic, with three postoperative deaths. Fourteen of the tumors were intracranial. One dermoid was found in the spinal cord.

The clinicians in the Section on Neurology of the Mayo Clinic have kindly permitted us to include the clinical observations in these cases, thus enabling us to give a complete story of this unusual and very interesting group of tumors.

#### LIFE HISTORY OR CLINICAL FEATURES

Pearly tumors (epidermoids and dermoids) are congenital new growths and since they arise from misplaced or aberrant epithelial tissue, the foundation for these tumors is laid early in the intra-uterine life. The evidence indicates that these tumors grow as does any other neoplasm, although the rate of increase in size is extremely slow. These tumors, because of their

Owing to lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the authors' reprints. From the Section on Neurologic Surgery (Dr. Love) and the Section on Pathologic Anatomy (Dr. Kernohan), the Mayo Clinic. Read before the Section on Nervous and Mental Diseases Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 13, 1936.

insidious development and because of their situation within the central nervous system, may never give rise to symptoms or signs indicative of their presence. They may be accidental and accessory observations at the time of a carefully conducted necropsy. On the other hand, these lesions may be so situated as to give rise to symptoms and signs relatively early, either as a result of encroachment on some important structure, such as the optic nerve, or as a result of interference with the normal circulation of the cerebrospinal fluid. The symptoms and signs produced by an intradural epidermoid are not characteristic of this tumor but are those of any tumor that is similar in size and situation, except possibly for the slowness of development, which is not an accurate criterion. So far as we are aware, an intradural epidermoid has never been diagnosed prior to operation or necropsy, unless it be in the second case reported by Olivecrona in his paper on suprasellar cholesteatomas. Olivecrona<sup>1</sup> operated on a girl aged 19 years for a suprasellar cholesteatoma, and a few days later a woman aged 27 was admitted to his service with exactly the same ophthalmic and roentgenographic manifestations. He felt that he was justified in venturing a diagnosis of suprasellar cholesteatoma in the latter case. At operation, the conditions found were similar to those in the first case. The extradural and intradiploic epidermoids often produce a characteristic roentgenogram, and, when they do, a diagnosis is not difficult. This diagnosis has been made many times by many different observers. As far as intraspinal epidermoid tumors are concerned, they are not diagnosed prior to operation or necropsy. They frequently are associated with more or less obvious congenital lesions, particularly of the spinal column, such as spina bifida, either manifest or occult. The presence of a congenital tumor or congenital compression of the spinal cord can be suspected, but its true nature must await exploration.

#### DIAGNOSIS

The diagnosis of an intracranial epidermoid is the diagnosis of any intracranial neoplasm, except that it possibly is slightly more difficult owing to the extreme slowness of development of the tumor. The localization in some cases is determined by ordinary neurologic methods; in others, the ocular changes (defect in the visual field) denote the situation of the growth. However, it is necessary to employ either ventriculography (if choked disks are present) or encephalography to detect and localize some of these tumors. Likewise injection of iodized oil at times is necessary to localize intraspinal congenital epithelial tumors. As stated previously, the intradiploic and extradural epidermoids usually can be diagnosed by roentgenography.

#### REPORT OF CASES

This report is based on a careful study of fifteen<sup>13a</sup> cases collected from the files of the clinic. In ten of the cases the tumors were verified microscopically as epidermoids. All these tumors were intracranial, seven being intradural and three extradural. Five tumors

were verified microscopically as dermoids; three of these were intracranial and intradural; one was intraspinal, intradural and intramedullary. The fifth tumor was extracranial but, because of the erosion of the skull and the finding of structures within the tumor which unmistakably pointed to an origin common to that of the intracranial dermoids, it has been classified as an intracranial tumor.

CASE 9.—A white woman, aged 43, registered at the clinic on April 4, 1935, because of headache and a "soft spot" in the right parietal region. At the age of 10 years she had received a blow on the right parietal region. A hematoma had formed and after it had disappeared she had noted a defect in the skull. When she was 40 years of age the defect had begun to increase in size. Six months before she came to the clinic she had struck the "soft spot" on a nail; after that the defect had increased rapidly in size, and bulging had been noticed for the first time.

The patient always had been of the nervous, high-strung type and she had been accustomed to worrying a great deal.

Examination at the clinic revealed that the skull in the right temporoparietal region had been replaced by a soft, doughy mass, about 7.5 by 5.5 cm. This mass was elevated about 1 cm.

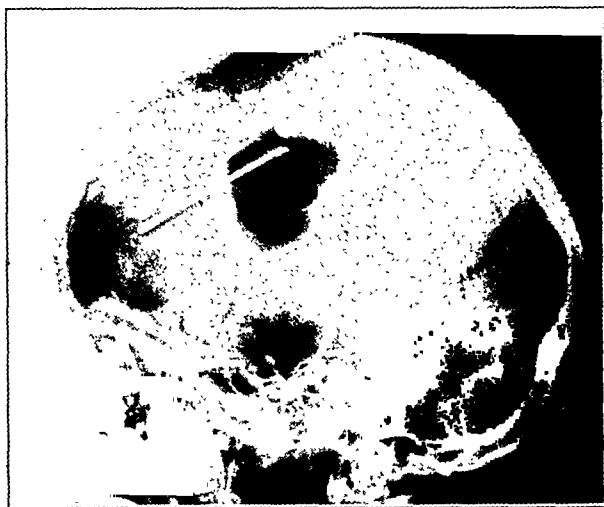


Fig. 1.—Erosion of skull caused by epidermoid; increased density above mastoid process represents an osteoma which was a secondary finding; the metallic clip is a "bobbie pin" in the patient's hair.

above the level of the scalp. The bony defect was irregular in outline. No tenderness was present on palpation. The general physical, ophthalmic, neurologic and laboratory examinations did not reveal any abnormality except that roentgenograms of the skull revealed a sharply defined, irregular region of destruction, which involved both tables of the skull, just posterior to the coronal suture in the right parietal region. The bone was thickened about the periphery of the destruction (fig. 1). Just posterior to the right mastoid process was a dense region about 3 cm. in diameter. A clinical diagnosis of epidermoid was made.

April 23, 1935, the mass was explored and found to be a large (4 by 8 cm.) cystic tumor, which was situated extradurally and extended outward to the periosteum; the intervening bone had been completely destroyed. The tumor was removed completely; the outer layer of dura also was removed with the tumor, in order to prevent recurrence. At the same time an osteoma (see roentgenologic observations) was removed from the mastoid region. Convalescence was entirely satisfactory. It was necessary to aspirate the wound on several occasions because of the tendency for the defect to become filled with serum. The patient was dismissed from the hospital eight days following operation, at which time the wound was healed and the neurologic examination did not reveal anything abnormal.

1. Olivecrona, Herbert: Suprasellar Cholesteatomas, *Brain* 55:122-134 (March) 1932.

13a. Since this paper was presented in Kansas City one of us (Love) has successfully operated on two additional congenital epithelial tumors of the brain. One of the patients presented more or less classic symptoms and signs for a Rathke pouch cyst, but when the tumor was removed and the tissue studied by Kernohan it was discovered that the tumor was a true epidermoid cyst. The other patient had had grand mal seizures for sixteen years. His neurologic examination was negative, but encephalography disclosed a defect in the anterior horn of the right lateral ventricle. At operation a very large intracerebral dermoid cyst was removed.

The histologic picture was identical with that found in case 1 except that the wall of the cyst was slightly thicker than it was in case 1; nevertheless, the wall of the cyst was made up of squamous cells with keratohyaline granules. There were no basal cells, hair follicles, sweat glands or sebaceous glands.

Letters indicate that the patient's health is good, but she is much concerned about the defect in her skull and is suffering from cancerphobia.

In this case there seems to be a direct relationship between trauma to the skull and the subsequent development of a neoplasm at the site of injury.

**CASE 12.—History.**—A single woman, aged 30, registered at the clinic Aug. 22, 1935, complaining of diplopia, vomiting, dizzy spells and headache. In January 1935 she had noted transient attacks of diplopia, associated with occipital headaches. In March she had noted blurring of the vision, especially for close objects. About the same time vomiting, without nausea, had made its appearance. In May the patient had begun to complain of dizziness and had had difficulty with locomotion, which she had attributed to defective vision. The patient had been an "intelligent, wise-cracking young lady."

Ocular examination at the clinic did not reveal any abnormality. There was definite and rather marked rigidity of the neck; otherwise the neurologic examination did not reveal any evidence of an intracranial lesion. Roentgenograms of the head and neck disclosed benign frontal hyperostosis and a fusion of the second and third cervical vertebrae. The latter was considered to be a congenital anomaly. A tentative diagnosis of a tumor of the posterior fossa was made: ventriculography revealed a symmetrical internal hydrocephalus, which confirmed the suspicion of the presence of a lesion in the posterior fossa. A suboccipital craniectomy was performed by Dr. Adson, August 30. Incision of the dura mater in the midline revealed a brownish encapsulated tumor. The tumor was cystic and from it a semisolid brownish yellow substance was aspirated. The wall of the cyst was removed completely. The tumor was situated in the vermis and did not involve the fourth ventricle; that is, there was a "wall" of brain tissue between the tumor and the roof of the fourth ventricle. The wound



Fig. 2.—Healed wounds after operation for tumor of brain.

healed by first intention (fig. 2). The patient was dismissed from the hospital sixteen days, and from our care twenty-two days, following the operation. At the time of her dismissal her eyes were normal; she walked with a little unsteadiness of gait but there was no headache, diplopia, dizziness or vomiting. A letter received from the patient March 14, 1936, revealed that she was in excellent spirits at that time and was "wise-cracking" as usual; her letter was profusely illustrated with character sketches.

**Pathologist's Report.**—The stratum celluloseum was typical, but in addition to the basic staining material found in the previous tumors there were occasional hair shafts without definite bulbs. The tumor was lined with squamous stratified epithelium; it contained some keratohyaline granules, but no basal cells were present. There were some hair shafts, but hair follicles were not found, although the hair shafts were surrounded by epithelium. There were sebaceous glands, but no sweat glands or apocrine glands were present. Around

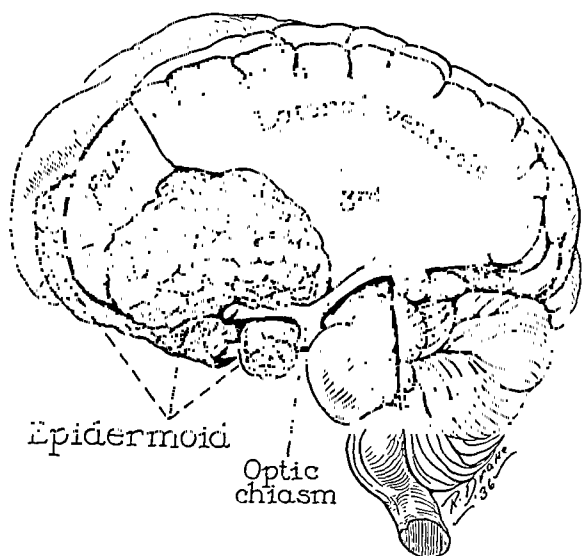


Fig. 3.—Semidiagrammatic representation of tumor (case 13) drawn from observations at operation and ventriculograms that were made prior to removal of epidermoid.

these epithelial structures there was a very thick wall of dense hyaline connective tissue and clefts from which cholesterol crystals had been dissolved during the histologic technical procedures. Around some of these clefts there were foreign body giant cells.

**CASE 13.**—A white man, aged 39, was referred to the clinic because of convulsive seizures, loss of memory and disturbance of mentality. At the age of 11 years a piece of steel had been extracted from his left eye and the vision in this eye had been permanently lost. He had been discharged from the army in 1918 because of "blindness." In 1925 he had received several contusions of the head when two busses had collided. In 1932 he had been knocked unconscious by a bicycle. In 1936 he had been knocked unconscious when some one had thrown a metal shoe from a second story window and struck him on the head. The history of the convulsive seizures was difficult to elicit because of the patient's faulty memory and tendency to theorize about his condition. Apparently, he had had his first convulsion in 1931. Two years later he had had another convulsion; after this the convulsions had recurred with increasing frequency. Four years (1932) prior to his registration at the clinic he had first noted diminution in the sense of smell on the right side. He gradually had lost the sense of smell entirely. He had become more and more forgetful and absent minded. He had been unable to concentrate, and mental effort had fatigued him unduly. There had been some attacks of very bad smell (sense of smell was lost objectively) which had been associated with nausea and giddiness.

Examination at the clinic revealed that the patient appeared anemic. He was very loquacious and his conversation was chiefly in technical (medical) jargon which was at times very difficult to comprehend. The value for the blood pressure was only 98 mm. of mercury for the systolic and 66 mm. for the diastolic. His basal metabolic rate was  $-14$  per cent. The acuteness of vision was  $6/30$  in the left eye and  $6/6$  in the right eye. The pupils were equal in size; the reflexes were normal for the right eye, but those for the left eye were diminished about 50 per cent. Examination of the ocular fundi disclosed a moderate pallor of the optic disks without loss of substance, which suggested a beginning primary optic atrophy.

Examination of the fields of vision revealed an incomplete bitemporal hemianopia. Neurologic examination revealed complete loss of smell bilaterally. Hearing was reduced in each ear. The tendon reflexes were diminished and no abnormal reflexes could be obtained. Roentgenograms of the head disclosed flattening of the sella turcica, with erosion of the posterior clinoid processes. The clinical diagnosis was basofrontal tumor or suprasellar cyst with hypopituitary syndrome. A right transfrontal exploration of the basofrontal region, which was performed by one of us (Love) March 20, 1936, disclosed a very large grayish, pearly tumor. Only the distal third of the right olfactory nerve could be seen when the right frontal lobe was elevated. The tumor surrounded the remainder of this nerve, hid both optic nerves and the optic chiasm from view, and extended laterally under the temporal lobe into the middle cranial fossa (fig. 3). When the capsule of the tumor was incised, flaky, avascular material, characteristic of that seen in epidermoids, was uncovered. By means of scoop and aspirator, the entire tumor was removed, except for a small piece of capsule that was intimately associated with the circle of Willis. A fairly large chunk of tumor was removed from the left optic foramen. When the tumor had been removed, both optic nerves, the optic chiasm, the anterior portion of the circle of Willis and the interior of the sella turcica appeared much as they do after a very extensive excision of a large tumor of the pituitary body. The wound was washed thoroughly with physiologic solution of sodium chloride to remove any loose pieces of the tumor and then was closed. Two Penrose cigaret drains were inserted to facilitate further cleansing of the operative field of any of the toxic substance of the tumor. The drains were removed forty-eight hours after the operation. The convalescence was uneventful and the patient was dismissed from the hospital on the eighth postoperative day (fig. 4). Postoperative neurologic examination did not reveal any change in the patient's condition. Examination of the eyes, two weeks following removal of the tumor, was made too soon to indicate what improvement in vision might occur. The patient, however, could read well.

The tumor was a typical epidermoid very similar to that described in case 1. The patient appeared anemic. His skin was pale and his appearance suggested cachexia, although his state of nutrition was satisfactory and the results of the blood count and the value for the hemoglobin were normal, as they also were in case 3. The patient's appearance, the low value for the blood pressure, and the low basal metabolic rate suggested hypopituitarism. These observations in association with the ophthalmic and roentgenographic evidence of a lesion in the region of the sella turcica brought up the question of a lesion of the pituitary body. As so often happens, exact diagnosis was impossible until the lesion was uncovered at the time of operation.

#### PATHOLOGY

In the presentation of these cases we have distinguished epidermoid from dermoid cysts. We have considered those tumors in which only squamous and basal type of epithelium were present to be epidermoid tumors. Cysts containing other elements of the normal skin, such as sweat glands, sebaceous glands, hairs or hair follicles, we have designated as "dermoid cysts." There were ten intracranial epidermoids, while there were three dermoids of the brain and one of the spinal cord; there was one dermoid cyst between the skull and the scalp. It was doubtful whether this tumor should be included in the present study, but it has been included because of several unusual and interesting features. Trauma has been thought to be of considerable importance in the etiology of these tumors by allowing remnants of the epidermis to be carried into the deep layers of the scalp or even between the inner and outer tables of the skull. These remnants could thus act as

an anlage of epidermoid or dermoid tumors. In case 14 there was one fact which suggests that traumatic misplacement of the epidermis of the scalp was not a factor in the etiology of the tumor. We found apocrine glands ("skunk glands") in the wall of the cyst, and apocrine glands are not normally present in the scalp but are found only in such places as the skin of the breast, axillae, and around the anus (fig. 5). The presence of these glands in the dermoid between the scalp and the skull suggests an embryologic malformation as the anlage for this and probably for most other such dermoids and epidermoids. However, trauma may serve to draw attention to them and even may hasten the progress of such growths.

Dermoid and epidermoid tumors of the nervous system may be divided into the following subgroups: those found in the cerebellum, those found in the spinal cord,



Fig. 4.—Appearance of patient 13 following his dismissal from the hospital; right transfrontal wound well healed.

those which originate in the basotemporal region and which extend into the temporal lobe, into the suprachiasmatic region or even into the frontal lobes, and, finally, those found between the tables of the skull. There is nothing which is characteristic microscopically of any one of these tumors; all are similar.

We consider squamous epithelium that can be identified as such a necessary criterion for the microscopic diagnosis of an epidermoid tumor. We have studied several tumors the contents of which were typical of dermoid or epidermoid tumors, but when we could not identify squamous epithelium in the walls of these cysts we did not classify them as dermoids or epidermoids. Squamous epithelium has several characteristics by which it can be identified. The presence of keratohyaline granules is necessary (fig. 6). These granules are present only in squamous epithelium, and only in the superficial layers. Prickle cells or squamous cells with intracellular bridges are also characteristic, but

frequently these bridges cannot be observed. Cornification of the superficial layers is perhaps one of the most constant characteristics, and during the stage of cornification the keratohyaline granules disappear. The cornified cells are then desquamated and it is these desquamated cornified cells which constitute the contents of the cysts. On this account, cholesterol crystals are rarely found in epidermoids; this is readily proved by

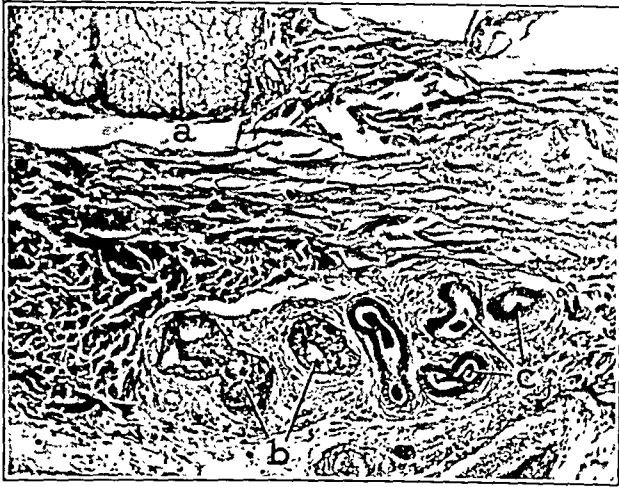


Fig. 5.—Wall of cyst showing (a) sebaceous glands, (b) sweat glands and (c) apocrine glands (slightly reduced from a photomicrograph with a magnification of 75 diameters).

microscopic or chemical analysis of one of these cysts. We found cholesterol crystals in several of the tumors in the cases described, but these crystals were associated with old blood pigment, hyaline and other types of connective tissue, and lymphocytes, but not alone with the desquamated epithelium or the secretions of the sebaceous glands or sweat glands. We observed blood vessels in several of these cysts and it seemed to us that the cysts must have ruptured at some previous time and allowed the mesodermal elements to enter the cysts.

Basal cells are frequently associated with squamous epithelium, but they are not always present in epidermoid cysts; when, however, they are observed, other elements that are characteristic of skin usually are present and the tumor is a dermoid. Hair present in a dermoid tumor of the nervous system seldom has good roots or hair bulbs, although the stalks are frequently surrounded by squamous and basal epithelium which are typical of hair follicles. Occasionally, hair stalks puncture the walls of dermoid tumors and project into the surrounding brain tissue without even being surrounded by epithelium. When this phenomenon is observed, the brain tissue apparently has no resentment toward the foreign body, since there is no cellular reaction on the part of the brain tissue around the hair shaft.

The only change in the brain as the result of the tumor is one of local atrophy, which is attributable to pressure exerted by the expanding cyst. The ganglion cells disappear in the neighborhood of the tumor and there is frequently a mild degree of gliosis. Occasionally, foreign body giant cells were observed in these cysts but they were always in the cysts and surrounded cholesterol crystals which acted as foreign bodies.

In one of our cases we encountered a large number of daughter cysts within the main cyst (fig. 7). This was a unique observation. The walls of the daughter

cysts contained the same type of epithelium as did the mother cyst; therefore the daughter cysts were readily identified as epidermoid cysts. We have no explanation to offer as to how these small cysts occurred or by what process they occurred. If they had been situated outside the main cyst it would have been possible to explain them on the same basis as the mother cyst, namely, as cell rests, but it is difficult to understand how cell rests could enter the large cyst which grew after birth. The cyst in which they were encountered contained much mesodermal tissue, which probably had gained entrance through a previous rupture, and it is possible that the daughter cysts had gained entrance at the same time or in a similar way. We have already mentioned the presence of apocrine glands in the wall of one of these cysts; such glands are not generally recognized as being present in dermoid tumors, but their presence should be no surprise because of the peculiar odor noted in the contents of some dermoid cysts.

*Differential Pathology.*—It is necessary to distinguish dermoid or epidermoid tumors from several other types of tumors of the brain or spinal cord. The most common neoplasm with which epidermoids are confused or to which they bear the closest similarity are adamantinomas or cysts of Rathke's pouch.<sup>1</sup> The latter neoplasms can be and usually are diagnosed correctly by their characteristic roentgenologic appearance. On microscopic examination, adamantinomas have a characteristic stroma with numerous anlagen of teeth which are characteristic. These tumors also produce characteristic roentgenologic shadows.

Epidermoid or dermoid cysts must also be distinguished from gliomatous cysts;<sup>17</sup> but this is easy, as the latter cysts usually contain a clear yellow fluid which coagulates on standing and the walls of the cysts are not lined with epithelium but are lined with neo-

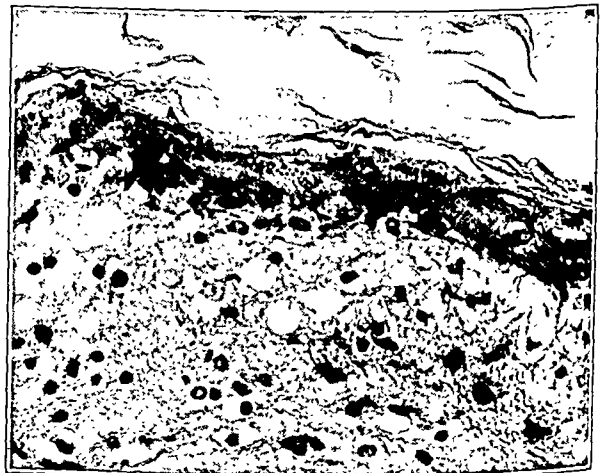


Fig. 6.—Epithelium of epidermoid cyst resting on brain tissue; the superficial cells contain typical keratohyaline granules; specimen stained with hematoxylin and eosin (slightly reduced from a photomicrograph with a magnification of 400 diameters).

plastic glial cells. Abscess of the brain does not have an epithelial lining and the contents are usually purulent matter from which diverse organisms can be obtained on culture. The clinical course of abscess of the brain is usually short and associated with fever; epidermoid tumors usually progress slowly and the

17. Craig, W. McK., and Kernohan, J. W.: *Cerebral Cysts*. J. A. M. A. 102: 5-10 (Jan. 5) 1934.

clinical course is afebrile. There is one condition to which an epidermoid tumor, or so-called cholesteatoma, is frequently likened, namely, the so-called cholesteatoma which is frequently found in the lateral ventricle of the horse. We have recently had an opportunity to study two specimens of this tumor and there is not even a remote resemblance to the epidermoid or dermoid tumor found in the human brain. The cholesteatoma



Fig. 7.—Contents of cyst, showing daughter cysts lined by squamous epithelium; cysts surrounded by inflammatory connective tissue (slightly reduced from a photomicrograph with a magnification of 110 diameters).

of the lateral ventricle of the horse is a tumor which is made up of masses of calcium embedded in connective tissue which contains some cholesterol crystals. Occasionally these crystals are surrounded by some foreign body giant cells. There is no basic staining or cornified desquamated epithelium, and the entire mass is surrounded by a thin layer of connective tissue outside of which are cells of the choroid plexus. These tumors are similar to much smaller masses normally seen in the human brain. In describing epidermoid tumors of the brain, reference is frequently made to so-called cholesteatoma of the ear. The latter condition is usually the result of a chronic infection in which the products of inflammation do not drain from the middle ear but accumulate and gradually erode the bone. There is no squamous epithelium surrounding this mass, which is made up of debris resulting from dead cells.<sup>18</sup>

The epidermoid cysts between the inner and outer tables of the skull produce a peculiar roentgenogram which may be simulated by certain sarcomas of the skull, but there is no difficulty in arriving at a differential diagnosis after examining a specimen microscopically. In the same way, epidermoid cysts are easily distinguished from osteitis fibrosa cystica. Sebaceous cysts of the scalp should be distinguished from dermoid or epidermoid tumors situated between the scalp and the skull. The greatest difference between these cysts is the absence of squamous epithelium and keratohyaline granules in the wall of the sebaceous cysts; the latter are lined with a secreting type of epithelium.

Echinococcus cysts frequently have been found in various portions of the brain and spinal cord, and epidermoid cysts must be distinguished from them. Squamous epithelial cells do not line echinococcus cysts, and the contents of the two cysts are also different. Hook<sup>1</sup>

lets can usually be found in the contents of echinococcus cysts, which are fluid in contrast to the semisolid contents of epidermoid cysts or dermoid cysts.

#### COMMENT

The average age of the patients who had dermoid tumors was 22.3 years at the onset of symptoms; the greatest age at the time of onset was 29 years. The average age of patients who had epidermoid tumors was 20 years at the time of onset; the greatest age at the time of onset was 34 years. The average duration of symptoms was sixteen years in cases in which epidermoids were present and eight and a half years in cases in which dermoids were present. The youngest patient who had a dermoid tumor was 2½ years of age, and the youngest patient who had an epidermoid tumor was 24 years of age at the time of examination at the clinic. Twelve of the fourteen patients (85.7 per cent) who had a congenital epithelial tumor (dermoid or epidermoid) in the head complained of headache. Voris, Adson and Moersch,<sup>19</sup> in a study of 314 cases in which tumors of the frontal lobe were verified at the Mayo Clinic, found that 83 per cent of the patients complained of headache; the next most frequent symptom was convulsive attacks. In our series, only two patients had had convulsions; both of these patients had tumors that were situated in the basofrontal region. It is of interest to note that 78.5 per cent of the patients in our series of cases displayed definite alterations in their mental reactions, a proportion which is higher than that (63 per cent) found by Voris, Adson and Moersch in cases in which tumors involved the frontal lobe. It is known that mental disturbance<sup>20</sup> is a frequent finding in cases of tumor of the brain, but it is difficult to account for such a high percentage in this series of tumors, most of which did not involve the frontal lobes. A congenital intracranial dermoid or epidermoid should be suspected in any case in which mental disturbance is associated with headache that has

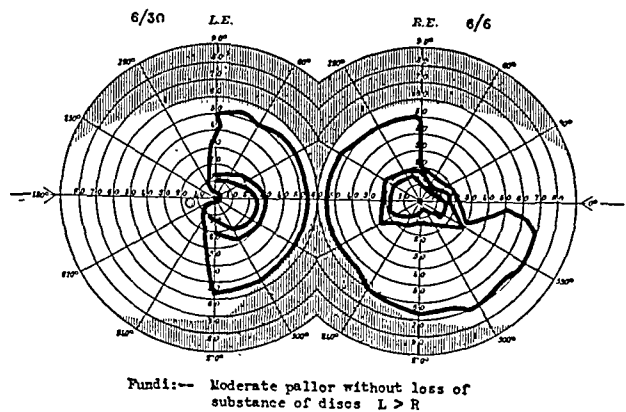


Fig. 8.—Perimetric fields (case 13) showing bitemporal hemianopia.

been present for a long time and suggests increased intracranial pressure. This is particularly true if another congenital lesion has been detected. A high degree of suspicion may lead to an accurate preoperative diagnosis in such cases.

Five of the patients in this series had edema of the optic disks at the time they were examined at the clinic.

18. Lillie, H. I., and Stark, W. B.: The Insidious, Symptomless, Destructive Effect of Cholesteatoma, *S. Clin. North America* 6:1359-1364 (Oct.) 1926.

19. Voris, H. C.; Adson, A. W., and Moersch, F. P.: Tumors of the Frontal Lobe: Clinical Observations in a Series Verified Microscopically, *J. A. M. A.* 104:93-98 (Jan. 12) 1935.

20. Moersch, F. P.: Psychic Manifestations in Cases of Brain Tumors, *Am. J. Psychiat.* 4:705-724 (April) 1925.

One had an associated defect in the field of vision which was sufficiently characteristic to localize the tumor. Three patients had visual defects, the one just mentioned and two others; one of the latter, patient 13, also had pallor of the optic disks (fig. 8). The visual defects were accurately localizing.

The presence of a tumor and its situation were correctly diagnosed preoperatively in eleven of the fourteen cases in which the tumors occurred in the head. Encephalography was employed in two of the remaining three cases. By this procedure an expanding lesion was definitely demonstrated in one case, and in the other case the roentgenograms were suggestive but inconclusive.

In eight cases the tumors were diagnosed and localized by neurologic and ophthalmic methods. In four cases the tumors were diagnosed by palpation of the head. Roentgenograms of the skull confirmed the presence of a tumor in these four cases; in two of these cases the roentgenogram was so characteristic that a correct preoperative diagnosis of the type of tumor was made. In the third of these cases, in which the tumor was the first of the type seen, the condition would be recognized now, for the roentgenograms were characteristic. In the fourth case the tumor had been diagnosed elsewhere by aspiration of the contents of the cyst.

Extradural epidermoids can usually be recognized in the roentgenograms. The characteristic appearance at first is that of a more or less smooth erosion of the calvarium and a ballooning of the tables of the skull; later, one or both of the tables may be destroyed. When the outer table is destroyed, a soft doughy mass can be palpated over a defect in the bone. Calcium may be observed in the wall of the tumor.

There are no criteria for making a correct diagnosis of the type of intradural tumor prior to operation. Intracranial tumors may produce symptoms for many years. In some of the cases in this series, symptoms had been present for as long as twenty years, but the symptoms usually are not known or considered to be the result of the tumor until after it has been discovered either at operation or at necropsy. There usually is a change in the character or severity of the symptoms or additional disturbances that lead to a careful investigation and to the discovery of an intracranial tumor.

The relationship of trauma to these tumors is not clear. Trauma to the region of such a tumor doubtless will influence its growth, but we do not feel that injury in itself is sufficient to cause the tumor. Fortunately, a preoperative diagnosis of the type of tumor is not necessary, for these tumors lend themselves admirably to surgical extirpation and the results of operation are very gratifying.

In fourteen of the fifteen cases studied, operation was performed. There were three postoperative deaths. A child, aged 2½ years, died because of increased intracranial pressure, eleven days following operation for a dermoid cyst of the cerebellum. There was no evidence of meningitis. A man, aged 30, died of bronchopneumonia five days following operation for a dermoid cyst of the right temporal lobe. No meningitis was discovered. The third death was that of a woman, aged 32, who succumbed half an hour following the complete removal of a large epidermoid from the fourth ventricle. At necropsy, no adequate explanation for her death could be found.

#### SURGICAL REMOVAL OF DERMOID AND EPIDERMOID TUMORS OF THE CENTRAL NERVOUS SYSTEM

The treatment of these tumors is surgical removal, and the surgical extirpation should be as complete as possible. One has to be satisfied at times with an intracapsular enucleation, but there certainly is a chance of recurrence if the capsule is left behind, for it is the capsular portion which constitutes the active growing portion of the tumor. Roentgen therapy is without avail, as one would naturally suppose from the life history and microscopic structure of these tumors. The intradiploic and extradural tumors offer no surgical problem, but one must be careful in removing an intradiploic tumor lest one overlook an extension of the tumor intracranially through the thinned and eroded inner table of the skull.

The surgical approach to these tumors does not differ from that of any similarly situated neoplasm. There are, however, some points of technic which are peculiarly applicable to this class of tumors. Because of the avascularity of these lesions, the exposure does not have to be as wide as does that for a glioma or meningioma of similar size. The contents of these tumors can be removed with a scoop and an aspirator, and the collapsed capsule then can be removed without encountering much bleeding. Usually, a few small vessels will have to be controlled by means of electrocoagulation. It is usually possible to effect a complete extirpation of the contents and then the capsule. However, when a portion of the capsule is intimately associated with an important structure, such as an optic nerve or a branch of the circle of Willis, one should not sacrifice such a structure in order to accomplish total removal, for these tumors grow very slowly and it is the better part of surgical judgment to risk the chance of recurrence of the tumor than to do irreparable damage in effecting complete removal of a benign tumor.

There has been a great deal written and more said regarding the development of meningitis following operations for the removal of these tumors. We have not had an instance of meningitis in this series of cases. We have seen meningismus but have never obtained any organisms from smears or cultures of the cerebrospinal fluid following operation; in the cases in which death occurred there was no evidence of meningitis at necropsy. We believe that drainage of the operative field for forty-eight hours following operation is of distinct value. This encourages a washing to the outside of any of the toxic contents of the tumor that may have been spilled at the time of operation.

#### SUMMARY

Dermoid and epidermoid tumors (cholesteatomas or pearly tumors) of the central nervous system are benign, congenital neoplasms of epithelial origin. Their clinical course is variable and the intradural variety is not diagnosed prior to operation. The extradural type can be recognized roentgenographically. Surgical removal of these tumors is possible and the results are good. A diagnosis of tumor was made in each of the fifteen cases reviewed, and fourteen of the fifteen patients were operated on and the presence of a tumor verified at operation. There were three postoperative deaths. The other patients recovered and were living at the time this paper was written; the length of life varied from one month (in case 13) to six and a half years following the surgical removal of the tumor.

## ABSTRACT OF DISCUSSION

DR. ERNEST SACHS, St. Louis: I have had six cases that fall into this group, which is a little less than 1 per cent in the tumor series. It is a rare condition in my experience. All the cases were of the epidermoid type. None corresponded to the type that the authors spoke of as the dermoid. They were all intradural tumors. It has been my experience, just as the experience in the Mayo Clinic, that prior to the operation it was possible to make a pathologic diagnosis. These tumors, in a number of instances, developed very slowly, but that would not be a point that would enable one to differentiate or predict what sort of a tumor one would encounter. Two cases are of particular interest. Of the six cases, four were located in the posterior fossa, one was around the chiasm and one was located in the incisura, lying just over the vein of Galen. The patient was operated on twice. At the first operation I thought I was dealing with a posterior fossa tumor and tried to reach it through the posterior fossa. Subsequently by combined operation I was able to get the tumor out, capsule and all. I have had one other case that was of particular interest in bearing on the point made, namely, that it is necessary to remove all the capsule in order to obtain a cure. The patient was a girl whom I operated on in 1922. At that time a diagnosis of eighth nerve tumor was made. At operation in the region of the eighth nerve, embedded in the bone, I found a typical (at that time it was called cholesteatoma) epidermoid tumor. The notes made at that time stated that I had removed the entire tumor and the capsule. This girl came back thirteen years later with an enormous recurrence. I operated on her a second time. The tumor at this operation weighed 41 Gm. She died of bronchopneumonia several days after the operation. Evidently I had left a bit of the capsule, although I was under the impression that I had removed all of it. It is absolutely essential, in order to avoid a recurrence, to remove every bit of the capsule, if possible. One of the tumors around the chiasm, similar to the one the authors showed, I believe I have removed entirely. It is a number of years since this girl was operated on, but there too I am wondering whether one of these days the patient may not return. In these six cases, nine operations were performed. One patient died at the second operation and two others died, of a fourth ventricle tumor and one in the angle, immediately after operation. I was somewhat at a loss to explain the origin of the tumor lying in the incisura. Perhaps Dr. Bailey can explain how an epidermoid tumor can develop just above the vein of Galen, lying at the form of the incisura. I presume it is an epithelial rest which, of course, one cannot find anywhere. It seems worth mentioning such an unusual location.

DR. R. GLEN SPURLING, Louisville, Ky.: The authors have covered the subject of epidermoids in a thorough and instructive manner. In my series of approximately 200 verified brain tumors there were two cholesteatomas, one in the cerebello-pontile angle, the other in the left frontal lobe. There were no unusual features to the angle epidermoid; the frontal one, however, was associated with an extraordinary clinical history: A boy of 17 years was admitted to my service May 31, 1931, with complaints of headache, vomiting and drowsiness. The acute symptoms were of three weeks' duration, but he had been subject to headache for about a year. The past history was negative except for typhoid two years previously, from which he made an uneventful convalescence. The neurologic examination led to the diagnosis of a left frontal lobe tumor, and he was prepared for craniotomy. Before turning the frontal bone flap, I did a needle exploration of the frontal lobe through a burr hole in the hope of tapping a cyst. Much to my surprise I evacuated a large abscess, the pus from which yielded a pure culture of typhoid bacillus. The abscess refilled promptly and after several aspirations a wide exploration of the cavity was made. After the purulent material was cleared away a glistening circumscribed mass was uncovered. This mass was approximately the size of a hen's egg and had the typical appearance of a cholesteatoma. It was removed completely. The abscess wall was drawn to the surface and attached to the glia. Healing progressed satisfactorily and the patient was discharged August 11, free from symptoms. He has remained well to date. Microscopic examination of

the specimen showed the typical appearance of a cholesteatoma. What sequence of events led to the formation of the typhoid abscess and the relationship between the abscess and pearly tumor can at best be but speculated on. That the cholesteatoma lying in the depths of the frontal lobe grew from an embryonic cell rest is the only reasonable certainty connected with the whole consideration. It is my belief that the infection was implanted, either by coincidence or otherwise, on an already actively growing tumor.

DR. JOSEPH E. J. KING, New York: My two cases were included in Dr. Bucy's paper on this subject. The first case was seen in 1923. X-ray films were inspected before examination of the patient. The skull defect was so like that of Dr. Cushing's case reported in the May 1922 issue of *Surgery, Gynecology and Obstetrics* that I was able to make a pre-operative diagnosis. Dr. Cushing stated that a diagnosis should be made before operation from the x-ray films alone in those cases of extradural epidermoid cholesteatoma presenting the typical skull defect. This defect has a scalloped border or margin, which is very dense and hard. When seen on edge, as when looking at a saucer edgewise, the superimposed margins of the defect appear as a very dense line. The lesion arises in the diploe, destroys the inner table of the skull, and thins the outer table so that it may even be perforated at certain points. It may attain a very considerable size. The lesion in the first case was almost identical with that of Dr. Cushing's, except that it was somewhat smaller. It was completely removed. The second case was one in which the lesion involved the posterior fossa. It showed a similar skull defect and was diagnosed before operation. It was removed by morcellation for the reason that it could not be extirpated *en masse*. The first patient was operated on about thirteen years ago and the second about three years ago. Both are doing well and have shown no signs of recurrence.

DR. WALTER E. DANDY, Baltimore: These tumors develop from congenital rests; they are therefore of very slow growth, for most of them are found in adult life. In our cerebellar approach for trigeminal neuralgia, ten of these tumors have been encountered in the cerebellopontile angle and were presumably the cause of the pain. They are small tumors, just pressing on and setting off the zone in trigeminal neuralgia. None of these tumors would have been found had the temporal approach been used for section of the sensory root; and, since the tumors are small, they can be removed with almost no risk. Later they would doubtless have caused signs and symptoms of intracranial pressure and would have been far more difficult of complete removal.

DR. J. GRAFTON LOVE, Rochester, Minn.: In one of our patients, a 2½ year old child with a tumor in the cerebellar lobe, there was found at operation what appeared to be grossly an abscess. A culture was taken, from which a pure streptococcus was obtained. At the time of the operation the tumor had the characteristics of an abscess. It was drained as an abscess, and no extirpation was attempted. The child, unfortunately, died five days following operation from markedly increased intracranial pressure. I am glad Dr. Sachs emphasized the importance of total removal, which we didn't have the time to emphasize. If the capsule, which is the active part of these tumors, isn't removed, one can look forward to a recurrence.

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**Diphtheritic Laryngitis.**—Diphtheritic membrane may form in the fauces, and spread to the larynx, or it may be present in the larynx alone. The term "true croup" is applied to diphtheritic laryngitis. The symptoms are those of diphtheria with laryngeal obstruction in addition. The child is ill and pale, with a significant bluish tinge of the cheeks and lips. The breathing is noisy, and there is indrawing of the intercostal spaces and upper abdomen, indicating the degree of respiratory obstruction. Spasm of the larynx will aggravate symptoms. The cervical glands are enlarged. Examination of the throat may show membrane on the fauces. In its absence it is essential to examine the larynx with the direct laryngoscope. No anesthetic is necessary or advisable. Treatment is that of diphtheria.—Crooks, James: *Surgical Aspects of Croup in Childhood, Practitioner* 137:709 (Nov.) 1936.

## Clinical Notes, Suggestions and New Instruments

### SUBCUTANEOUS EMPHYSEMA IN ASTHMA

JOHN M. SHELDON, M.D., AND WILLIAM D. ROBINSON, M.D.  
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Subcutaneous emphysema is a rare complication of asthma. Only nine cases<sup>1</sup> have been reported since Watson<sup>1</sup> first described the complication in 1885. Because of the paucity of information concerning this condition, we report the following case:

#### REPORT OF CASE

J. B., a boy aged 16 years, admitted to the University Hospital, Oct. 18, 1935, complained of shortness of breath of seven days' duration. He described the dyspnea as expiratory. The attacks were accompanied by an audible wheeze and terminated in cough productive of small amounts of white frothy sputum. The first asthmatic paroxysm occurred in June 1934. Since then he had been troubled from June to October of each year. Grain dust and hay dust were thought to initiate respiratory symptoms. The past history was negative. A maternal uncle was known to have asthma.

When he was examined the patient was having a mild asthmatic attack. The pulse rate was 132 per minute, the

and one subcutaneous injection of 0.3 cc. of epinephrine 1:1,000 solution. Following this medication, clinical manifestations of asthma were alleviated. Thirty-six hours after admission, crepitation typical of subcutaneous emphysema was noted over the left anterior thorax from the midline to the posterior axillary line, in the left upper quadrant of the abdomen, in the axilla, and in the anterior and posterior triangles of the left side of the neck. He stated that he had no symptoms referable to this subcutaneous emphysema. He remained comfortable and had no further asthmatic attacks, and the respirations remained normal throughout the rest of his hospital stay. The clinical evidence of subcutaneous air gradually decreased and completely disappeared in four days. A check-up examination eighteen days later was entirely negative, and no further respiratory symptoms occurred during the interval.

The urinalysis was negative. The blood Kahn test for syphilis was negative. The blood count showed 15,000 white blood cells per cubic millimeter, with a 7 per cent eosinophilia on admission and 13,400 white blood cells with a 9 per cent eosinophilia four days later. Intradermal tests to a group of ninety-five foods, fifteen epidermals and forty miscellaneous inhalant allergens were nonreactive. Scratch tests to thirty-one pollens were negative with the exception of timothy and long and short ragweed, which were markedly positive. The Pirquet test with 0.1 cc. of old tuberculin 1:10,000 was negative. Sputum examination on admission showed Curschmann's spirals and many eosinophils in the (Wright) stained smear.



Roentgen appearance forty-eight hours after patient's admission. a, postero-anterior view; b, lateral view; c, right anterior oblique view. Arrows point to extravasated air.

respiratory rate 32 per minute and the blood pressure 116 systolic, 70 diastolic. His stature was average. The state of nutrition was good. Excessive lacrimation, seropurulent nasal discharge and a postnasal drip were present. Numerous musical râles and rhonchi were heard throughout the lung fields. No subcutaneous emphysema was present. The remainder of the physical examination was of no diagnostic significance.

During the first twenty-four hours in the hospital he was given N-methyl-cyclohexenylmethylmalonylurea, 260 mg. orally,

A frontal stereoscopic film (a in the illustration) of the chest forty-eight hours after admission showed subcutaneous and subfacial emphysema of the left shoulder area. Air was present in the left side of the neck along the deep fascia extending into the mediastinum. The mediastinal emphysema was small in amount but particularly noticeable along the pericardium. There was air in the lower portion of the right side of the neck mesially. Lateral and right anterior oblique films (b and c in the illustration) demonstrated emphysema in the axillary fossa, around the acromion and the scapula on the left. In the mediastinum, air was visible anterior to the ascending arch of the thoracic aorta, over the pericardium in the superior mediastinum and posteriorly between the hilus and the aorta. Roentgen studies in all projections taken ten days after the appearance of emphysema were negative, showing complete absorption of the previously extravasated air.

#### COMMENT

The mechanism of production of subcutaneous emphysema has been proposed by Kelman<sup>2</sup> as follows: Increased intrapulmonary pressure first causes a vesicular emphysema of the peripheral alveoli, which have less support from surrounding lung tissue than do the more central alveoli. Increased pressure may then cause a rupture of the distended marginal

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1. These include:

- Watson, F. S.: Emphysema of Cellular Tissue Due to Asthma, Brit. M. J. 2: 699 (Oct.) 1885.
- Calverly, E. J. G.: Interstitial Emphysema Beneath the Deep Cervical Fascia as a Complication of Asthma, *ibid.* 2: 1899 (Dec.) 1902.
- Whitby, C. J.: Subcutaneous Emphysema in a Case of Spasmodic Asthma, *ibid.* 1: 73 (Jan.) 1905.
- Kahn, I. S.: Subcutaneous Emphysema in a Case of Bronchial Asthma, J. A. M. A. 88: 1883 (June 11) 1927.
- MacDermot, H. E.: Subcutaneous Emphysema in Asthma, Canad. M. A. J. 21: 708 (Dec.) 1929.
- Artagaveytia, A., and Zanzi, L. A.: Subcutaneous Emphysema in Course of Crisis of Asthma, Rev. d. tuberc. d. Uruguay 2: 428 (Nov.) 1932.
- Kruysveldt, C. S.: One Case of Widespread Emphysema of the Skin in Bronchial Asthma, Nederl. tijdschr. v. geneesk. 77: 5380-5382 (Dec. 2) 1933.
- Davidson, F. C.: Subcutaneous Emphysema in a Case of Bronchial Asthma, Lancet 1: 1230 (June 9) 1934.
- Pastorino, H.: Subcutaneous Emphysema and Pneumothorax as Complications of Asthma, Rev. d. tuberc. d. Uruguay 4: 256 (Jan.) 1935.

2. Kelman, Sarah R.: Experimental Emphysema, Arch. Int. Med. 24: 332 (Sept.) 1919.

vesicles, with an escape of air under the visceral pleura. Since the pleura offers greater resistance to escaping air than does the pathway along the blood vessels, the course of the air is directed toward the hilus. From the hilus the air follows the pleural reflections and enters the tissues of the anterior mediastinum. The air may then spread up or down, chiefly along the pathway of the great vessels. Joannides and Tsoulos,<sup>3</sup> on introducing air under pressure into the bronchi of dogs, found the weakest point of the lung to be at the hilus where the visceral and parietal pleurae meet. Berkley and Coffen,<sup>4</sup> in a study of necropsy material of bronchopneumonia and generalized interstitial emphysema, described two routes for the escape of air from the lungs into the subcutaneous tissues. In the intrapleural route it was necessary for the air to escape through both the visceral and parietal pleurae. These authors felt that this was a rare pathway but could occur without pneumothorax when extensive adhesions were present. Mediastinal emphysema would not occur under these circumstances. In the more common extrapleural route, air coursed from the ruptured air sac along the blood vessels to the hilus, then to the posterior mediastinum and the anterior mediastinum, and then entered the subcutaneous tissues of the neck by following the blood vessel sheaths through the deep fascia. From these studies it would seem that, in the asthmatic patient, alveolar rupture could occur either at the hilus or at the periphery of the lung with migration of air through the tissues as described.

Alveolar rupture must be dependent on both increased intrapulmonary pressure and decreased strength of the alveolar walls. The asthmatic paroxysm alone will raise the intrapulmonary pressure, but additional coughing, straining or lifting is probably necessary to raise it to the point of alveolar rupture. The relatively rare occurrence of this complication in asthmatic patients, in spite of their violent respiratory effort, suggests that congenital or acquired weakness of the alveolar walls may be the more important factor. The age of the individual may be important in this phenomenon. The reported cases have occurred in young persons, from 8 to 25 years of age. It has occurred more often in patients having seasonal or infrequent attacks of asthma. The acuteness or severity of the attack and the sex of the patient are apparently of no significance.

Subcutaneous emphysema that occurs in asthma carries a good prognosis. No fatalities have been reported. The condition is self limited, with spontaneous recovery in from four to fourteen days. Treatment is entirely supportive.

#### SUMMARY

Subcutaneous emphysema is a rare complication of asthma. Only ten cases, including our own case, are known to us. The prognosis of the reported cases of subcutaneous emphysema, occurring in the asthmatic patient, is good.

#### TORTICOLLIS OF UNUSUAL ORIGIN

LAURENCE H. MAYERS, M.D., CHICAGO

The patient here studied, a girl of 19, has had wry-neck since puberty. A unique feature of her condition is that she can straighten her head at will but can maintain the position only as long as she can hold her breath. She can neither breathe nor swallow when her head is in a natural position.

#### REPORT OF CASE

**History.**—The patient's parents, concerned over her noticeable habit of carrying her head to the right, a defect so pronounced as to be a deformity, had consulted a surgeon, who advised an operation to correct the defect.

As a child the patient was normal. She was unusually active and her health was always good. The removal of adenoids when she was 7 years old was her only operation. Typhoid at the age of 10 was without after-effects. She menstruated at 12 and the following year she began gradually to gain in weight. At 14 she had measles.

It was at the age of 14 that the patient became conscious of a tendency of the head to incline to the right. There was no

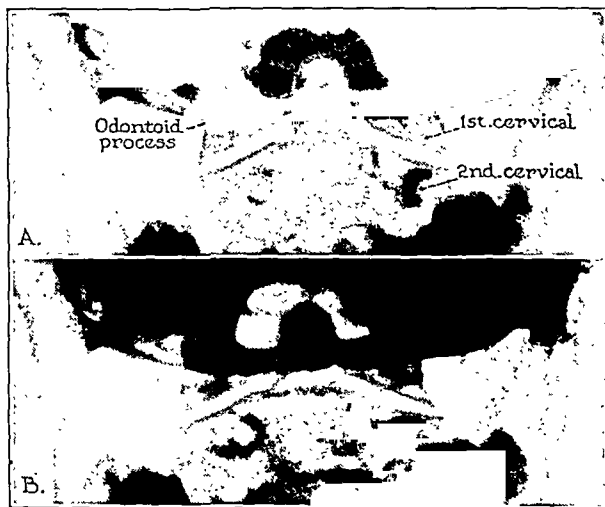
acute pain, and the inclination of the head came on gradually. In a few months the condition became more pronounced, but still the pain was not acute. At this time she was still in school and states that she was more conscious of the condition after exercise.

When she was 17 the condition of the neck became so annoying that a physician was consulted. He informed her that she had wry-neck and prescribed a tonic and calcium. These were without effect. A little later her parents took her to another physician, who recommended sun lamp treatments three times a week for several weeks. Again there was no relief and a consultation followed. The consultant prescribed stretching treatments and massage and by these she was greatly benefited.

At the present time the patient's life is routine and not at all strenuous. She sleeps well and her habits are wholesome.

**Examination.**—It was observed that the patient could straighten her head when she so desired but could not hold it long in that position. When it was held straight by force, she jerked it away. When asked why she did so she replied "So I can breathe." It was then discovered that she could neither breathe nor swallow when her head was in the natural position; that is, when her neck was straight. An injury was indicated, but of such an occurrence the patient had no knowledge.

The mother was appealed to and an accident at birth was recalled. This was a breech presentation with forceps on the



A, normal odontoid centrally located and symmetrical alignment of first and second cervical vertebrae. B, odontoid displaced to the right and asymmetrical alignment of lateral vertebral margins.

aftercoming head. The child had difficulty in breathing for several days and the attendants at times thought she would not survive. However, these difficulties were soon forgotten. The child's head kept its normal position until puberty, when the increase in weight already mentioned began.

Several roentgenograms of the cervical spine had previously been taken but there were no abnormalities. These, however, had not included a picture of the odontoid process. A roentgenogram was made of this process, which revealed that the odontoid process was shifted to the right.

#### COMMENT

Several circumstances about this case are unique. The patient was not seeking relief for herself; her parents were trying to correct the condition because of the girl's appearance.

It is unusual to see a deformity of this nature in which the patient can straighten her head by her own efforts but can maintain the position only for as long as she can hold her breath.

It is interesting also to note that the girl cannot swallow when her neck is straight but has to turn her head sidewise in order to swallow.

The history of the injury was given as an afterthought, the patient never having heard of the accident. The head remained straight until puberty, and during this time there was a sudden increase of weight. Growth was rapid and weight reached 160 pounds (72.6 Kg.) at the age of 14 years.

3. Joannides, Minas, and Tsoulos, G. D.: Etiology of Interstitial and Mediastinal Emphysema, *Arch. Surg.* 21: 333-339 (Aug.) 1930.

4. Berkley, H. K., and Coffen, T. H.: Generalized Interstitial Emphysema and Spontaneous Pneumothorax as Complications of Bronchopneumonia, *J. A. M. A.* 72: 535 (Feb. 22) 1919.

From the Department of Internal Medicine, Northwestern University Medical School.

In my opinion, the turning of the head at this age, making swallowing and breathing possible only when the head is inclined to the right, is the result of sudden changes in the structure of the neck during adolescence, especially the growth of the thyroid. The routine x-ray examination did not reveal the pathologic condition because the odontoid process was not included in the field.

Whether the explanation offered is right or wrong does not interfere with or alter the treatment. The one purpose it served was to prevent an operation that was doomed to failure.

180 North Michigan Avenue.

#### VISUALIZATION OF THE AMOUNT OF RESIDUAL URINE

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Since the introduction of excretory urography, a simple method of demonstrating the ability of the bladder to empty

that an excretory urogram is indicated in all obstructive conditions at the neck of the bladder to determine the physiology and anatomic state of the upper urinary tract, no additional measures are necessary to visualize the ability of the bladder to empty itself.

Before taking the last roentgenogram, the patient is allowed to void as completely as possible, and then the picture is taken and a graphic expression of the residue left in the bladder after voiding is obtained. This simple procedure avoids all instrumental interference with the bladder, avoids the dangers of infection, trauma of too sudden emptying of the organ and the occasional complete obstruction that follows the passing of a catheter. Even though one does not obtain an accurate quantitative measure of the residual amount, it gives a sufficiently clear picture to allow the student to obtain a satisfactory idea of the amount of residue and the topography at the neck of the bladder, without applying any measures other than excretory urography (figures 1 and 2). This procedure has been adopted as a routine in my service for all patients, usually



Fig. 1.—Cystogram produced by excretion urography.



Fig. 2.—Residual hippuran (sodium orthoiodohippurate) in bladder following voiding.



Fig. 3.—Excretory cystogram before voiding, showing stone within bladder shadow.



Fig. 4.—Excretory cystogram before voiding, showing stone within bladder shadow.

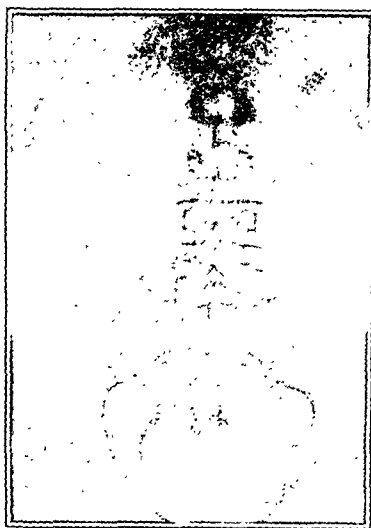


Fig. 5.—Excretory cystogram after voiding, showing small amount of residual urine, producing crescentic shadow outlining large intravesical prostate.



Fig. 6.—Excretory cystogram after voiding, showing small amount of residual urine, producing crescentic shadow outlining large intravesical prostate.

its contents has become available. An adequate kidney function is necessary, so that the concentration of the excreted opaque material will give a fairly clear cystogram. Owing to the fact

males, suffering from symptoms that are suggestive of bladder neck obstruction.

45 East Eighty-Fifth Street.

## Special Article

### THE PHARMACOPEIA AND THE PHYSICIAN

#### LOCAL MEDICATION OF THE UPPER RESPIRATORY TRACT

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*This is one of a series of articles written by eminent clinicians for the purpose of extending information concerning the official medicines. The twenty-four articles in this series have been planned and developed through the cooperation of the U. S. Pharmacopeial Committee of Revision and THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.—ED.*

The use of local medications by the general practitioner in the treatment of diseases of the upper respiratory tract should be restricted for the most part to acute infections. It is to be emphasized that attempts to treat chronic disorders by such measures are fraught with serious danger until the diagnosis of the underlying pathologic condition has been thoroughly established. This as a rule requires examination by a specialist in this field. All too frequently cases are encountered in which local medications have been carried out over long periods before a serious underlying infection or new growth has been discovered. The resulting loss of time commonly leads to serious or even fatal consequences.

#### ACUTE RHINITIS

The ideal therapeutic aims of local medication in acute rhinitis are the reduction of nasal congestion, the promotion or restoration of ciliary function and the destruction of pathogenic organisms. Recent experimental studies by Proetz,<sup>1</sup> Lierle and Moore,<sup>2</sup> Fenton and Larsell<sup>3</sup> and other workers have demonstrated that many of our accepted local preparations are actually destructive to epithelium and favor infection by impairing ciliary activity. In the light of these investigations ephedrine sulfate (from 0.5 to 3 per cent solutions with 1 per cent as the usual strength) in physiologic solution of sodium chloride most closely meets the ideal therapeutic requirements by producing prompt relief of congestion without slowing the ciliary activity or destroying the epithelium. The commonly used nasal oils, containing liquid petrolatum, eucalyptol, menthol, camphor and thymol, all definitely slow or paralyze ciliary activity despite their recognized soothing properties. As vehicles for ephedrine, therefore, they would appear from these studies actually to lessen its therapeutic value. The commonly used silver colloids mild protein silver and neosilvol (10 per cent solutions) have been found experimentally by McMahon<sup>4</sup> and by Fenton and Larsell to destroy epithelium and to impair ciliary action. Nevertheless they will continue to be widely used for their recognized empirical value. Merthiolate

(1:5,000 solution) is commonly combined with ephedrine solutions for its antiseptic properties, but it also has a paralyzing effect on cilia. It is thus evident that many commonly used preparations may combine desirable with at least experimentally proved undesirable effects on the nasal mucous membranes. Epinephrine even in a dilution of 1:5,000 causes a slowing of ciliary activity. Furthermore, the marked congestion that follows its transient vasoconstricting action has led most rhinologists to abandon its use in acute rhinitis. It should be emphasized that nasal solutions containing menthol should never be employed in infancy because of their possible toxic effect. The indiscriminate use of liquid petrolatum as nasal drops in infancy is not entirely without danger in view of the numerous reported cases of lipoid pneumonia from accidental inhalation. The usefulness of nasal drops will be increased by bending the head backward in the Proetz position or in the lateral head-low position described by Parkinson.<sup>5</sup> The use of nasal douches is not recommended in acute rhinitis because of the possibility of inducing an otitis media. Bland ointments of zinc or boric acid are soothing when troublesome irritation of the nasal vestibule and upper lip is present.

#### CHRONIC RHINITIS

Chronic rhinitis includes such a wide variety of causes that careful study by a competent rhinologist is required before treatment can be outlined. A chronic discharge may be caused by sinusitis, infected adenoids, polyps, foreign bodies or malignant growths. It may be a local manifestation of constitutional disease, such as congenital syphilis or diphtheria, or the result of atrophic or hypertrophic changes in the nasal mucous membranes. Successful management commonly requires surgery or special types of treatment, and simple local medication consequently plays a relatively minor rôle. Certain preparations are commonly used in this work. Oily solutions containing menthol and camphor (1 per cent) in liquid petrolatum reduce congestion and lessen irritation (prescription A). Mild

##### A. Menthol and Camphor in Oil

R. Menthol .....	0.3 Gm.
Camphor .....	0.2 Gm.
Oil of Cinnamon .....	0.2 cc.
Liquid Petrolatum .....	30.0 cc.

M. Label: Nasal drops or spray twice daily.

protein silver or neosilvol (10 per cent) are probably the most commonly used antiseptics for tamponage. Under certain conditions, notably atrophic rhinitis, stimulating topical applications are of value. Among the best may be mentioned Mandl's solution (potassium

##### B. Compound Glycerite of Iodine, Camphor and Menthol

R. Camphor .....	1.0 Gm.
Menthol .....	1.0 Gm.
Tincture of Iodine .....	4.0 cc.
Alcohol .....	8.0 cc.
Glycerin, q. s. ....ad	30.0 cc.

M. Label: Local application.

iodide 1 Gm., iodine 0.46 Gm., and sufficient glycerin to make 30 cc.); ichthammol mixtures (ichthammol 1.3 Gm., menthol 0.2 Gm. and sufficient petrolatum to make 30 Gm.); tannic acid in glycerin (glycerite of tannic acid 60 cc., glycerin 30 cc.) and prescription B. Where bleeding areas occur, a bead of silver nitrate or chromic acid makes an excellent cauterant. Trichloroacetic acid

From the Division of Otorhinolaryngology, the University of Rochester School of Medicine and Dentistry.

1. Proetz, A. W.: Effects of Certain Drugs on Living Nasal Ciliated Epithelium, *Ann. Otol., Rhin. & Laryng.* 43: 450 (June) 1934.

2. Lierle, D. M., and Moore, P. M.: Effects of Drugs on Ciliary Activity of the Mucosa of the Upper Respiratory Tract, *Arch. Otolaryng.* 10: 55 (Jan.) 1934.

3. Fenton, R. A., and Larsell, Olof: Experimental and Clinical Study of Histocytes in Acute and Chronic Inflammation of the Nasal Accessory Sinuses, *Laryngoscope* 43: 233 (April) 1933.

4. McMahon, B. J.: Effects of Ionization of the Mucosa of the Frontal Sinuses of Dogs, *Ann. Otol., Rhin. & Laryng.* 43: 643 (Sept.) 1934.

5. Parkinson, S. K.: A Lateral Head-Low Position for Nasal and Sinus Treatment, *Arch. Otolaryng.* 17: 787 (June) 1933.

may be similarly used. Preliminary cocainization will be required for this as well as for many surgical procedures. Cocaine hydrochloride solution of suitable strength is usually employed. It should not be used in children and should always be applied with caution because of the alarming or even fatal reaction that may follow in sensitive individuals. It has been established that preliminary medication before the use of cocaine greatly lessens its toxic effects. Morphine (from 0.01 to 0.016 Gm.) with atropine sulfate (from 0.00065 to 0.0004 Gm.) may be given thirty minutes before operations in which it is used. The barbiturates (barbital 0.65 Gm., phenobarbital 0.2 Gm. or pentobarbital 0.1 Gm.) given by mouth one hour before are also effective in lessening possible toxic effects. Pantocain has in my experience proved to be a safe and effective substitute for surface anesthesia in children. Nasal irrigations, carefully given, may prove of value in certain conditions, such as atrophic rhinitis. Mixtures containing salt, soda, and dextrose (1 teaspoonful of each in a pint of warm water) are commonly used. Hydrogen peroxide is helpful in such cases in loosening the crusts, preliminary to their removal by irrigation. Tampons moistened with peroxide may also prove useful in controlling epistaxis.

#### ACUTE INFECTION OF THE THROAT

Acute infections may attack the throat in the form of an acute pharyngitis or more diffusely as an acute tonsillitis of the catarrhal or follicular variety. Sometimes the staphylococcus or pneumococcus is responsible but as a rule the streptococcus is the causative organism. Most of the severe cases, especially the epidemic septic type, are due to the beta-hemolytic variety. The throat is affected in many acute diseases, notably scarlet fever, measles, diphtheria, Vincent's infections or the secondary stages of syphilis. Acute inflammation followed by ulceration may result from granulocytopenia or acute leukemia and the true cause be overlooked, especially in the early stages, unless a leukocyte count is made. It is evident therefore that careful diagnosis supported by laboratory studies is necessary for successful therapeutic management.

#### LOCAL TREATMENT

In the early stages of acute pharyngitis the local application of silver nitrate (from 5 to 20 per cent), mild protein silver (10 or 20 per cent) or Mandl's solution often gives relief. Vigorous swabbing, however, should be avoided. Gargles, so frequently prescribed, are often useless, especially in children, because the contraction of the tongue and pharyngeal muscles prevents the solution from reaching the inflamed parts. They may, however, be used in the form of salt and soda, one-half teaspoonful each in a glass of warm water or Dobell's solution, 2 tablespoonfuls in a glass of warm water. In the more severe infections the use of hot salt and soda irrigations will be more effective. Lozenges containing small quantities of menthol, camphor, guaiac and codeine, orthoform tablets or calcidin-anesthesin troches lessen the discomfort in mild cases.

In acute tonsillitis the most effective local treatment consists in irrigation of the throat every two hours with a warm solution containing 1 teaspoonful of sodium chloride and sodium bicarbonate in 1 pint of water. Warm glucose solution (50 per cent) made with "Corn Syrup" 1 part and water 2 parts is also effective. The

patient's head should be inclined forward with the mouth open so as to facilitate the flow. When irrigations are not possible nor well tolerated a similar warm solution of salt and soda, potassium permanganate (1:5,000 solution) or acetylsalicylic acid (five tablets crushed in a glass of water) may be used as a gargle.

#### C. Compound Glycerite of Iodine

R	Iodine .....	0.5 Gm.
	Potassium Iodide .....	1.6 Gm.
	Oil of Peppermint .....	0.5 cc.
	Glycerin .....	30.0 cc.
M.	Label: Topical application.	

The practice of frequent and vigorous swabbing is decidedly not recommended. Semisuspension by raising the head by means of the hands placed over each mastoid process may be employed effectively to prevent swallowing when severe dysphagia is present.

#### FUSOSPIROCHETAL ANGINA (VINCENT'S ANGINA)

The common acute infectious disease fusospirochetal angina is due to a symbiosis of organisms including a fusiform bacillus, a widely coiled spirochete (*Spirochaeta vincenti*), a vibrio and a coccus. These organisms are anaerobic and commonly multiply in the crevices about the teeth, in pockets under the gums or in the depths of the tonsillar crypts. Pathologic studies indicate that the spirochete penetrates deeply, produces the often extensive destruction of tissue characteristic of the lesion and is the chief agent responsible for the spread of the disease. The bacillus predominates in the more superficial zone and produces the fetor. Since the causative organisms are anaerobic, the fundamentals of treatment require open drainage with free access of air, the local application of oxidizing agents and local or general arsenic therapy to destroy the spirochetes.

A survey of the literature indicates that in the mild or diphtheroid type of lesion any antiseptic will cure. Silver nitrate (from 10 to 20 per cent), tincture of iodine, chromic acid (5 per cent), copper sulfate (10 per cent), gentian violet, methylene blue, acriflavine base and mercurochrome have all been used successfully in this type of lesion. For the more severe and widespread infections, however, active oxidizing agents and spirocheticides are essential. The external necrotic layer should be gently removed with a swab soaked with hydrogen peroxide. A fresh swab saturated with solution of potassium arsenite or arspenamine in glycerin (10 per cent solution) should then be carefully applied over the diseased area. The patient may be given a small quantity of either of these preparations with instructions to apply them locally at four hour intervals. Sodium perborate has also proved effective, used frequently in saturated solution as a gargle or in cases of stomatitis as a thick paste mixed with water and followed by rinsing the mouth with warm water about five minutes later. In particularly severe cases or in those which fail to respond to local treatment within seventy-two hours, an intravenous injection of neoarsphenamine is advised. Intravenous therapy is especially indicated when there is an associated bronchitis suggesting an extension of the infection to the lower respiratory tract. Bismuth preparations, notably bismuth and sodium tartrate in 1.5 per cent glycerinate solution for topical application and 1.5 per cent aqueous solution for intramuscular use or bismuth tartrate in the form of a salve emulsion (30 per cent), used daily, have been enthusiastically advocated by certain European and South American observers as being more sedative, less

ic and more powerful than the arsphenamine group. ict precautions should be urged in order to protect er members of the household from the infection.

#### ACUTE LARYNGITIS

The therapeutic indications in acute laryngitis require control of inflammation, the release of spasm which so commonly characterizes this malady in early childhood), and the relief of obstructive dyspnea. The ter symptom is of course limited to severe infections d may require intubation or tracheotomy. The possi- lity of laryngeal diphtheria must be carefully investi- ted in all cases. The closed lymphatic system of the terior of the larynx limits absorption and accounts for ie relatively mild constitutional reaction that is com- monly present.

Complete rest in a warm room with even, moist tem- perature (70 F.) is essential to prompt control of the infection. Vocal rest also is important. Steam inhal- ations to which compound tincture of benzoin (1 tea- spoonful to a pint of water) is added constitute the most helpful local treatment. Menthol (0.65 Gm.) may be similarly employed (prescription D). These may be given directly at three hour intervals and a steam kettle should be kept going constantly in the room. A croup tent is most effective in young children. Hot applica- tions are beneficial, especially when a tendency to spasm is present. Cold applications may be soothing in adults when tenderness over the larynx is noted. Irritative

#### D. Mixture of Menthol, Camphor, Pine Oil and Eucalyptus

R	Menthol .....	15.0 Gm.
	Camphor .....	15.0 Gm.
	Oil of Dwarf Pine Needles.....	30.0 cc.
	Oil of Eucalyptus.....	30.0 cc.

M. Label: 1 teaspoonful in 1 pint of water—steamed and inhaled.

cough should be controlled by small doses of codeine sulfate. Small doses of phenobarbital are also of value in young children. When laryngeal spasm is present (croup), relaxation may be further aided by the use of emetics. For a child of 2 years, for example, syrup of ipecac, one-half teaspoonful every fifteen minutes until vomiting occurs, is the safest drug. Smaller doses (5 drops every two hours) may help to reduce the recurrence of spasm without causing emesis. Concomi- tant infection in the nose or throat requires appropriate local treatment. The diet should be light and fluids should be forced freely. Swabbing of the larynx may cause alarming spasm and should be avoided.

Chronic hoarseness should never be treated by the general practitioner. A serious lesion may otherwise pass unrecognized with disastrous results.

#### DISEASES OF THE EAR

Few ear conditions are suitable for treatment by the general practitioner. In acute external otitis (boils) the external auditory canal may be gently cleaned with alcohol and then packed lightly with a narrow gauze

#### E. Diluted Solution of Aluminum Acetate

R	Burow's solution .....	60.0 cc.
	Water .....	120.0 cc.

M. Label: Drop warmed solution in canal every 2 hours or apply on gauze wick.

wick soaked with aluminum acetate (saturated solu- tion), ichthammol in glycerin (10 per cent) or mer- cresin (prescriptions E, F and G). Heat should be applied as constantly as possible and gives great relief. Vaccines may be of value in recurrent cases. Fungus infections (otomycosis) are best controlled by daily

instillations of a 2 per cent solution of salicylic acid in alcohol (70 per cent) together with the administration of potassium iodide by mouth. Infections caused by *Bacillus pyocyaneus* respond to acetic acid (2 per cent solution). When earache is due to an acute catarrhal

#### F. Glycerite of Phenol and Ichthammol

R	Phenol .....	0.65 Gm.
	Ichthammol .....	7.5 Gm.
	Glycerin .....	30.0 cc.

M. Label: Drop into canal every two hours or apply directly by means of gauze packing.

#### G. Ointment of Salicylic Acid and Sulfur

R	Salicylic Acid .....	0.6 Gm.
	Precipitated Sulfur .....	30.0 Gm.
	Petrolatum .....	30.0 Gm.

M. Label: Apply locally.

inflammation of the tympanic membrane, warm drops of phenol in glycerin (from 5 to 10 per cent solution) repeated if necessary at three hour intervals for two or three doses often give relief.

## Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS ADOPTED THE FOLLOWING REPORTS.  
HOWARD A. CARTER, Secretary.

### PORTABLE BOVIE SURGICAL UNIT ACCEPTABLE

Manufacturer: The Liebel-Flarsheim Company, Cincinnati.

This unit is a simple, efficient equipment designed for electro-surgery. It is mounted in a sturdy cabinet of walnut finish.

The unit has a four gap circuit, multiple connections for operating instruments, a current selector switch, sterilizable control handles, instruments and instrument rack.

The firm submitted performance tests on this machine showing that the machine had been operated intermittently for one-half hour. The temperature rise of the transformer and spark gap was within the limits of safety established by the Council. The Council's investigator confirmed the evidence submitted by the manufacturer.

The firm has also informed the Council that this unit is identical to the Junior Bovie Electro-Surgical Unit, already accepted, ex-

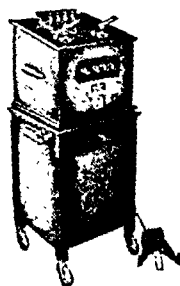


Fig. 1.—Portable Bovie Surgical Unit.

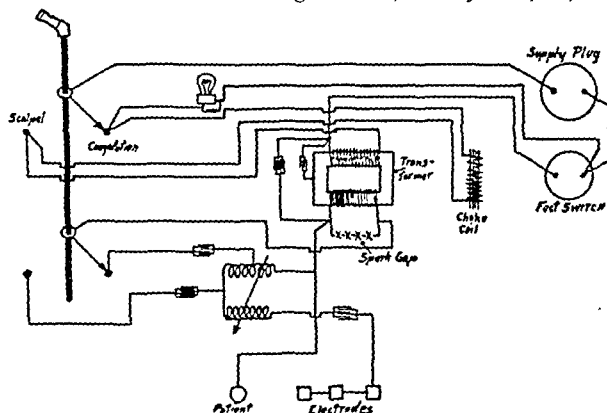


Fig. 2.—Schematic diagram of circuit.

cept that the portable model is slightly more powerful. It is not equipped for medical diathermy.

The Council on Physical Therapy voted to include the Portable Bovie Surgical Unit in its list of accepted devices.

# FISCHER MODEL "SWDI" SHORT WAVE APPARATUS ACCEPTABLE

Manufacturer: H. G. Fischer & Company, Chicago.

This device is recommended for medical and surgical diathermy. It produces a high frequency electric current suitable for generating heat locally within the body tissues, and it may also be used for electrosurgery. The device is obtainable in wavelengths of 6, 12, 18 or 24 meters. If the physician desires, the wavelength may be changed merely by substituting a different oscillator unit, an operation requiring only a few minutes.

The electric field method or the electromagnetic induction method of application may be practiced with this short wave diathermy. The electrodes or applicators furnished with the apparatus consist of cuffs, pads and insulated cable. The circuit is of a well known type having two oscillator and two rectifier tubes. The patient's circuit is inductively coupled to the tank circuit. A variable condenser is used to tune the patient's circuit to electrical resonance. When this machine is operated under full load, it draws not more than 1,000 watts. Since no reliable method has been proposed to measure the output of energy available to the patient, this value is not given.

When making application for consideration, the manufacturer submitted evidence substantiating the heating ability of the unit. Observations were taken using 6, 12, 18 and 24 meter high frequency energy for both electric and electromagnetic field methods. For the electric field method, cuffs were applied to the thigh—one posterior to the hip and the other anterior to the knee. The cuff electrodes used in the investigation were

removed, leaving the rubber cannula in situ. Temperature measurements were taken by means of thermocouples of hypodermic needle type and introduced through the cannula. The third thermocouple placed on the skin surface underneath the cuffs was used to measure skin surface temperature. The junctions were immersed in ice enclosed in a quart vacuum bottle. The readings were observed on a Leeds and Northrup Portable Potentiometer. The thermocouples were calibrated in degrees Fahrenheit, against a Bureau of Standards thermometer. Initial temperatures were taken and then each subject was submitted to a twenty-minute application of short wave diathermy energy of maximum current strength at tolerance. At the end of this period, the temperatures were again recorded. Temperatures were observed at intervals of one minute until the temperature began to drop. The highest

## Results of Observations

Tech. Wave- nic length	Muscle Temperature		Subcutaneous Temperature		Skin Surface Temperature		Oral Temperature	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Cuff 24	99.55	104.27	95.85	102.85	91.73	98.20	98.53	99.00
Coil 24	99.97	106.05	97.72	105.55	96.08	98.71	98.71	99.60
Cuff 18	100.05	105.73	97.03	103.35	92.52	97.98	98.55	99.05
Coil 18	97.98	106.72	94.82	105.77	93.62	99.08	98.70	99.35
Cuff 12	100.13	106.45	97.48	103.98	93.13	98.42	98.50	99.05
Coil 12	99.73	106.60	97.33	105.83	94.55	99.37	98.67	99.00
Cuff 6	99.93	106.58	97.12	103.68	93.33	98.40	98.50	99.00

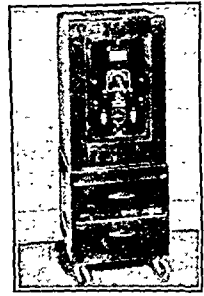


Fig. 1.—Fischer Model "SWDI" Short Wave Apparatus.

temperature attained was recorded as the final temperature in each instance. Then the thigh was permitted to cool until the temperature dropped to or near the initial temperature and the observation repeated with a different unit. Each temperature reading in the table is the average of six observations. Data on the temperature rise when pad or air-gap electrodes were employed were not submitted. The temperature rise of

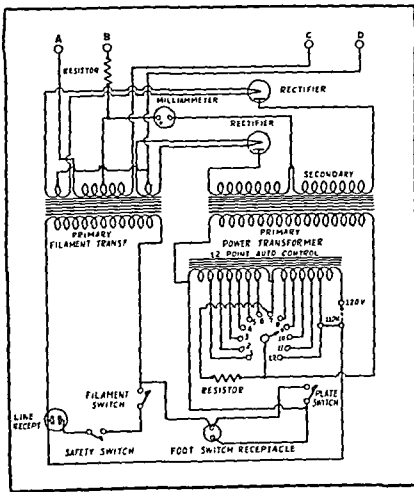


Fig. 2.—Fischer "SWDI" power unit.

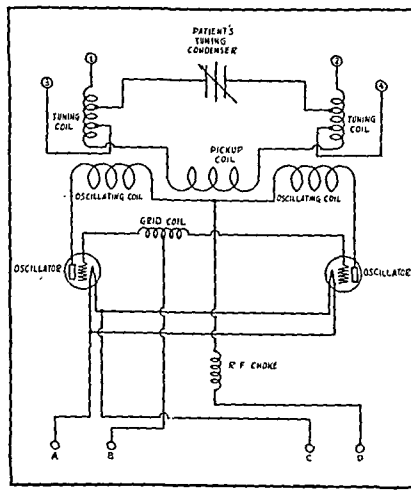


Fig. 3.—Fischer "SWDI" 6 oscillator unit.

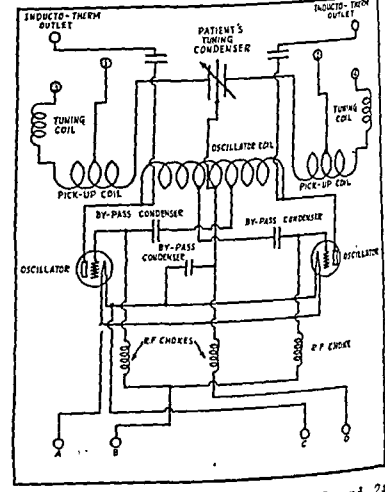


Fig. 4.—Fischer "SWDI" 12, 18 and 24 oscillator unit.

made of metal surrounded by thick protecting rubber. Several layers of toweling or felt, or both materials, were placed next to the skin to absorb perspiration and also to permit suitable spacing of the electrodes. In the case of the electromagnetic field method, a heavy insulated coil was wrapped around the thigh and separated from the skin by one-half inch of toweling and felt.

The human subjects were all vigorous, adult, male medical students, ranging in weight from 150 to 180 pounds. Two trocars placed in hard rubber cannulas were inserted into the thigh. One was introduced at right angles to the thigh and straight down into the depth of the muscle tissue until the instrument was at an approximate depth of 2 inches or until the femur was encountered. The second was introduced as nearly parallel to the skin as possible and subcutaneously at an approximate depth of one-eighth inch. The trocars were

the transformer, after the machine had been operated at full load for two hours, came within the limits of safety prescribed by the Council. The shipping weight of the apparatus is about 170 pounds.

The unit was investigated in a clinic acceptable to the Council under actual clinical conditions. There did not appear to be any appreciable advantage of one wavelength energy over another of those four wavelengths investigated when the cuff or coil technic was used. The six meter wavelength is not adaptable for coil technic. Burns may be produced but may be avoided by ordinary precaution. Their likelihood to occur is much less than with conventional diathermy.

Evidence was presented by the firm to substantiate the claims made for hyperpyrexia.

The machine was installed in a clinic acceptable to the Council and operated under actual clinical conditions. It was reported

is giving satisfactory service. In view of the favorable report based on the performance of this unit when cuff electrodes or coil technic was used, the Council on Physical Therapy voted to include the Fischer Model "SWDI" (6, 12, 18 and 24 meter) Short Wave Apparatus in its list of accepted devices.

## Council on Pharmacy and Chemistry

### REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.  
PAUL NICHOLAS LEECH, Secretary.

### KONSYL NOT ACCEPTABLE FOR N. N. R.

Konsyl, which is stated to be "the gelatinous-forming part of *Plantago Ovata*" prepared by mechanical removing of the psyllium seed coating, was presented for the Council's consideration by National Vaccine and Antitoxin Institute, Washington, D. C., in 1934. Soon thereafter the Council was notified that the firm name had been changed to Burton, Parsons & Co.

The first question considered by the Council was the eligibility of the product for a proprietary name. The Council held that there was not sufficient evidence to show eligibility of a preparation of psyllium seed, deprived of the greater part of its oil and woody fiber, to the use of a coined proprietary name.

The firm submitted an advertising circular which the Council found to contain various unwarranted claims. When these were reported to the firm, it sent a revised circular from which the specific claims objected to were deleted. The firm, however, offered no adequate evidence to justify the use of a coined proprietary name for this product. For this reason, the Council declared Konsyl unacceptable for inclusion in New and Nonofficial Remedies.

### NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

**PERCOMORPH LIVER OIL.**—*Oleum Percomorphum*.—A mixture containing the fixed oils obtained from the fresh livers of the percomorph fishes, principally *Xiphias gladius*, *Pneumatophorus dio*, *Thunnus thynnus* and *Stereolepis gigas*—sometimes also *Neothunnus macropterus*, *Katsuwonus pelamis*, *Sarda chiliensis*, *Germo alalunga*, *Thunnus orientalis*, *Scomber scombrus*, *Seriola dorsalis*, *Lutianus campechanus*, *Epinephelus morio*, *Roccus lineatus*, *Cynoscion nobilis*, *Eriscion macdonaldi*, *Epinephelus analogus*, *Stereolepis ishinagi* and *Sphyræna argentea*, containing 50 per cent of cod liver oil. It is biologically assayed to have a potency of not less than 60,000 units of vitamin A (U. S. P.) per gram and of not less than 8,500 units of vitamin D (U. S. P.) per gram.

**Actions and Uses.**—Same as those of cod liver oil. See General Article Cod Liver Oil and Cod Liver Oil Preparations, N. N. R. 1936, p. 449.

**Dosage.**—Prophylactic, for normal infants 10 drops daily; curative, and in severe conditions, to 20 drops daily. The product is marketed with a dropper designed to deliver 3 drops to the minim.

Percomorph liver oil, 50%, in cod liver oil, is a yellow to brownish yellow, oily liquid. It has a slightly fishy but not rancid odor and a fishy taste. It is slightly soluble in alcohol but is soluble in ether, chloroform, benzene, carbon disulfide and ethyl acetate. The specific gravity is from 0.922 to 0.930 at 25 C. The refractive index is from 1.480 to 1.485 at 20 C.

A solution of one drop of the oil in 1 cc. of chloroform, when shaken with one drop of sulfuric acid, acquires a blue color, changing to violet, dark green, and finally brown. Treat 5 cc. of oil with 5 cc. of benzene and centrifugate for twenty-five minutes at 25 C.; no precipitate forms and a clear solution remains.

Fill a tall, cylindrical, standard oil-sample bottle of about 120 cc. capacity with percomorph liver oil, 50%, in cod liver oil, at a temperature between 23 and 28 C., stopper, and immerse the bottle in a mixture of ice and distilled water for five hours; the oil remains fluid and forms no deposit.

Dissolve 2 Gm. of percomorph liver oil, 50%, in cod liver oil in 20 cc. of a mixture of equal volumes of alcohol and ether, which previously has been neutralized with tenth-normal sodium hydroxide, using 5 drops of phenolphthalein T. S. as indicator, and titrate with tenth-normal sodium hydroxide to the production of a pink color which persists for fifteen seconds: not more than 1 cc. of tenth-normal sodium hydroxide is required (*free acid*). The amount of unsaponifiable matter as determined by the method of U. S. P. XI, page 446, is not less than 3.5 per cent nor more than 7 per cent (it is semisolid in appearance). The saponification value as determined by the method of U. S. P. XI, page 445, is not less than 174 and not more than 186. The iodine value as determined by the method of U. S. P. XI, page 445, on 0.18 to 0.20 Gm. of sample, accurately weighed, is not less than 145 and not more than 180.

The undiluted fixed oil obtained from the fresh livers of the percomorph fishes and used in the preparation of percomorph liver oil 50 per cent in cod liver oil conforms to the following constants as determined by methods of U. S. P. XI: specific gravity, from 0.924 to 0.930 at 25 C.; refractive index, from 1.484 to 1.490 at 20 C.; free acid in 2 Gm., equivalent to not more than 1 cc. of tenth-normal sodium hydroxide; unsaponifiable matter, not less than 7 nor more than 13 per cent (semi-solid in appearance); saponification value, not less than 168 nor more than 182; iodine value, not less than 145 nor more than 180.

**Mead's Oleum Percomorphum.**—A brand of percomorph liver oil-N. N. R.

Manufactured by Mead Johnson & Co., Evansville, Ind. No U. S. patent or trademark.

**Mead's Oleum Percomorphum, 50% (In Capsules):** Each capsule contains 10 drops (0.222 Gm.) of Mead's Oleum Percomorphum, 50%, representing a vitamin potency of not less than 13,300 vitamin A units and 1,850 vitamin D units, U. S. P.

**COD LIVER OIL** (See New and Nonofficial Remedies, 1936, p. 450).

**Mead's Standard Cod Liver Oil** (formerly Mead's Newfoundland Cod Liver Oil) (See New and Nonofficial Remedies, 1936, p. 451).

The following dosage form has been accepted:

**Mead's Cod Liver Oil Fortified with Percomorph Liver Oil.**—A mixture of cod liver oil-U. S. P. and percomorph liver oil 5 per cent. It has a potency of not less than 6,000 vitamin A units (U. S. P.) per gram and of not less than 850 vitamin D units (U. S. P.) per gram.

**AZOCHLORAMID** (See New and Nonofficial Remedies, 1936, p. 228).

The following dosage form has been accepted:

**Azochloramid Solution in Triacetin 1:125:** A solution containing Azochloramid 1 Gm. in 125 Gm. of triacetin (triacetin, a mixture containing 100 per cent glyceryl triacetate ( $\text{CH}_3\text{OOCCH}_2$ ), for use in the preparation of azochloramid in volume of azochloramid in triacetin 1:125 diluted with 15 volumes of olive oil).

**DIPHTHERIA ANTITOXIN, BOVINE.**—An antitoxin differing from diphtheria antitoxin-U. S. P. in that it is made from the serum of cattle instead of from horse serum and is less potent.

Mulford Biological Laboratories, Sharp & Dohme, Inc., Philadelphia and Baltimore.

**Diphtheria Antitoxin (Bovine).**—An antitoxin derived from the blood serum of cattle immunized against diphtheria toxin. Diphtheria antitoxin (bovine) serves as an alternative to diphtheria antitoxin (equine) in the treatment of individuals giving a positive reaction to the ophthalmic test with diphtheria antitoxin prepared from horse serum. Marketed in packages of one 30 cc. ampule vial containing 5,000 units.

**POLLEN ANTIGENS-LEDERLE** (See New and Nonofficial Remedies, 1936, p. 35).

The following additional product, supplied in five vial packages representing series A, B, C and F as described in New and Nonofficial Remedies 1936, page 35, and in packages of three 3 cc. vials containing 100, 1,500 and 20,000 pollen units per cubic centimeters, respectively, has been accepted:

**Mixed Grasses Pollen Antigen-Lederle** (*June Grass, Orchard Grass, Sweet Vernal Grass, Red Top and Timothy, in equal parts*).

The following additional dosage form has been accepted:

**Ragweed Combined Pollen Antigen-Lederle:** Also marketed in packages of three 3 cc. vials containing 100, 1,500, and 20,000 pollen units per cubic centimeter, respectively.

**CONCENTRATED POLLEN ANTIGENS-LEDERLE** (See New and Nonofficial Remedies, 1936, p. 32).

The following additional product, supplied in five syringe packages representing series A, B, C and F as described in New and Nonofficial Remedies 1936, page 32, has been accepted:

**Mixed Grasses Concentrated Pollen Antigen-Lederle** (*June Grass, Orchard Grass, Sweet Vernal Grass, Red Top and Timothy, in equal parts*).

**PARATHYROID EXTRACT-LILLY** (See New and Nonofficial Remedies, 1936, p. 327).

The following dosage form has been accepted:

**Parathyroid Extract-Lilly, 1 cc. Ampules:** Each cubic centimeter contains 100 units.

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SATURDAY, DECEMBER 5, 1936

## UTILIZATION OF DIFFERENT FORMS OF IODINE

Different forms of a number of dietary constituents are utilized with varying degrees of efficiency. Certain iron compounds, for example, are easily available to the organism and are well utilized for the formation of hemoglobin, whereas certain others are poorly utilized. Similar differences have been observed with respect to compounds of calcium and of copper. Because of the well known importance of iodine in animal nutrition, the problem of the relative efficiency of utilization of different forms of this element have received some attention. One of the earliest studies of the question<sup>1</sup> was made on a human subject consuming a diet low in iodine. The amounts of iodine retained in the body were determined by the "balance" method following the oral administration of various iodine-containing substances. The retention of iodine was found to be highest when this substance was supplied in the form of iodine-containing fats (liver oil) or potassium iodide; somewhat poorer retention was observed if iodine was supplied in the form of green vegetables (watercress or spinach) or sardines. Although this work may be open to possible criticisms with respect to the methods employed, there is nevertheless a definite indication that different forms of iodine are available to the organism in varying degrees.

Recently the problem has been reinvestigated in the rat<sup>2</sup> and in the laying hen.<sup>3</sup> In the former study, animals were fed a basal diet which uniformly produced goiter because of its low iodine content. The various iodine-containing substances to be investigated were added to the basal diet in quantities supplying equivalent amounts of iodine. The effect on the fresh and dry weight and the iodine content of the thyroid glands were determined as an index to the antigoitrogenic

value, and hence the degree of utilization, of iodine from the substance employed. The results indicated that iodine in the form present in milk, oysters and dried haddock was just as effective in preventing thyroid hypertrophy and in promoting the storage of iodine in the gland as was potassium iodide. Thus, no support is given by these results to the view that "food iodine" is superior to "inorganic iodine." Iodine supplied in the form of Irish moss was not as effective as were the other forms, suggesting that the iodine present in this substance is only partially available to the organism.

Similar evidence of differences in the availability of iodine from different substances was obtained in the studies on laying hens,<sup>3</sup> the amount of iodine appearing in the excreta and in the eggs serving as criteria of the effectiveness of the substance given. Little difference was found between the retention of iodine and the iodine content of the eggs after the administration of oyster shell, desiccated thyroid, sodium or potassium iodide, potassium iodate, diiodotyrosine or iodized olive oil. However, the iodine of iodosalicylic acid appeared to be only partially available. More than 70 per cent of the iodine administered in this form appeared in the excreta, whereas only 48 to 66 per cent of that given as the other compounds was eliminated. Likewise, the iodine content of the eggs from hens given iodosalicylic acid was decidedly less than that from the eggs of hens fed the other iodine-containing substances.

There are apparently distinct differences in the availability of iodine in various forms. These differences may not be of great significance as far as the dietary supply of iodine in the normal human individual is concerned, since the iodine of many common foods, as milk and sea foods, appears to be readily available to the organism. However, in patients whose iodine requirement may be greatly augmented by hyperactivity of the thyroid gland or by other pathologic conditions, the question of supplying iodine in its most utilizable form may become highly significant.

## EFFECTS OF HEAT ON THE HUMAN BODY

Consideration of the effects of heat falls into two natural divisions; namely, the acute results of encountering high temperatures for short periods, and the effects of residence in tropical climates. Drinker,<sup>1</sup> in a recent article, has discussed some of the physiologic aspects of encountering these two forms of heat. Sweat is an important element concerned in body response to high temperatures. Since sweat contains from 0.1 to 0.5 per cent of sodium chloride, a daily production of sweat of 7.5 liters, such as may occur under the influence of high temperatures, would mean a loss of approximately 22.5 Gm. of salt. Since the average normal excretion

1. von Fellenberg, T.: Das Vorkommen, der Kreislauf und der Stoffwechsel des Jods, pp. 310-314; *Ergebn. d. Physiol.* 25: 176, 1926.

2. Remington, R. E.; Coulson, E. J., and Levine, Harold: Studies on the Relation of Diet to Goiter: IV. The Antigoitrogenic Value of Some Foods, *J. Nutrition* 12: 27 (July) 1936.

3. Asmundson, V. S.; Almquist, H. J., and Klose, A. A.: Effect of Different Forms of Iodine on Laying Hens, *J. Nutrition* 12: 1 (July) 1936.

1. Drinker, C. K.: The Effects of Heat and Humidity upon the Human Body, *J. Indust. Hyg. & Toxicol.* 18: 471 (Oct.) 1936.

of salt in the urine is only about 12 Gm. in twenty-four hours, such a depletion of body chlorides probably would initiate most important physiologic events. Under such circumstances, therefore, it would be necessary to restore the normal salt-water ratio as rapidly as possible. For this purpose, excess salt administered both orally and under the skin combined with milk by mouth usually furnishes an adequate supply of both essentials and aids in the prevention of heat cramps. In fact, as Drinker points out, the prevention of heat cramps is of greater importance than their treatment. Men at hard work under high temperatures must be in good physical condition. Alcohol and excess of all sorts must be avoided. A sodium chloride intake of at least 15 Gm. a day must be maintained. Some sort of adaptation appears to occur in physically competent men placed at work in high temperatures. Little is known of the nature of this acclimatization, but apparently men sweat more readily as they become accustomed to exposure to heat; also the sweat appears to contain a lower concentration of sodium chloride. Such conditions as "heat exhaustion" and "heat stroke" appear to be due to abnormal stimulation of heat production. Treatment of these disturbances consists in the use of cold packs or cold baths, salt solution under the skin, and water by mouth as soon as possible.

The slower and more subtle effects of prolonged residence in the tropics are of even more importance to man. The gradual deterioration in health which white persons experience constitutes the real problem. Deterioration is in fact the rule, and two years is probably the longest safe period for tropical residence. Furthermore, it is probable that the effects of tropical residence are worse in women and children than in men. The basal metabolism of individuals transferring from a temperate to a tropical region seems to undergo considerable individual variations. Thus, in one person's observations on himself, the basal metabolism began to fall within a few days after hot weather was encountered. It remained low until cooler weather was brought by trade winds, when it immediately rose to its previous level. In other instances, however, significant changes in basal metabolism were not noted. As a rule, a slight increase in body temperature is the rule on entering tropical climates. Height is apparently attained more readily than in temperate regions, and fatness is uncommon. A tall, thin type of person is perhaps best suited for tropical residence, having a maximum surface for heat loss in relation to body weight. Fertility appears to be reduced in the tropics, both sexes being affected. A slight decrease in pulse rate and in systolic blood pressure is the rule, but the changes are relatively insignificant. Respiration tends to decrease in rate, and the minute volume is somewhat higher. Alterations in blood volume, if any, need further detailed study. A slight alkalosis has been reported, particularly in persons leading a sedentary life in the tropics. Blood

sugar is apt to be low, and nonprotein nitrogen has been reported from northern Australia to be increased. A reduction of total phosphorus in the blood has also been reported. Red cells are slightly increased in number and white cells decreased, though in neither is the change important. Little is definitely established as to the effect on the ductless glands and nervous system. It is said that after about 3 years of age children tend to become weak and apathetic and that initiative and application become poor after the tenth year. In the case of adults, weakening of the will power with laziness and the gradual development of vicious habits are commonly noted. The latter observations, however, are invariably vague, and authorities are contradictory.

Drinker concludes that, in order to succeed in the tropics, white men must be willing to undergo discipline they would not subject themselves to in the north. The principles that should govern life in the tropics are simple and consist in moderate amounts of simple food, plenty of water, adequate salt intake, daily exercise, no alcohol and adequate sleep. This simple summation of the effects of long continued heat and the methods of combating it should serve as an admirable basis for present discussions and further investigation.

#### VITAMIN B<sub>1</sub> AND PYRUVATE METABOLISM

In the rapid development of our knowledge of the chemistry and physiology of the vitamins, definite chemical structures have already been assigned to a number of them. The symptoms of vitamin deficiencies have been established and in many instances the resulting pathologic condition has been largely clarified. Although the end results of vitamin deprivation are now fully described, the early alterations in the normal physiologic functions of the organism, occurring before gross pathologic changes become manifest, are quite obscure. As in many other studies of intermediary metabolism, the initial and final steps in the process are easier to elucidate than are the transformations that take place in the course of the development of symptoms of deficiency. Investigators are, however, actively looking into these difficult relationships. The studies have already produced data with respect to the possible relationship of vitamin B<sub>1</sub> to carbohydrate metabolism in general and, more specifically, to the transformations of two important intermediate catabolites of carbohydrate metabolism: lactic and pyruvic acids.

Investigations in the department of biochemistry at Oxford University demonstrated<sup>1</sup> that there is an increased amount of lactic acid in the brain of pigeons in the terminal stages of vitamin B<sub>1</sub> deficiency, as compared with the lactic acid content of the brain tissue of normal birds. A reaction<sup>2</sup> for pyruvic acid was

1. Kinnersley, W. H., and Peters, R. A.: *Biochem. J.* **23**:1126 (No. 5) 1929.

2. Peters, R. A., and Thompson, R. H. S.: *Biochem. J.* **28**:916 (No. 3) 1934.

observed in lactate solutions in which the diseased pigeon brain had respired in vitro. Furthermore, the addition of crystalline vitamin B<sub>1</sub> caused an extra uptake of oxygen and a disappearance of lactate and pyruvate from the incubating mass of tissue. These results led to the hypothesis that vitamin B<sub>1</sub> is indirectly concerned with the oxidative removal of lactate and pyruvate in the avian brain. It was suggested that the effect of the vitamin is indirect because of the wide variations of the data found for the ratio of extra oxygen uptake to pyruvic acid disappearing, when these values were compared to the calculated ratios. The results are striking for the reason that pyruvic acid has thus been demonstrated to be the first organic substance which disappears in vitro as the result of the action of vitamin B<sub>1</sub>. The observations are in harmony with an early suggestion that disorders observed in polyneuritis may be due to the accumulation of intermediate substances, arising from carbohydrate breakdown, which cannot be metabolized in the absence of the vitamin.

Sherman and Elvehjem,<sup>3</sup> at the University of Wisconsin, prepared for chicks a ration so low in vitamin B<sub>1</sub> that polyneuritis develops within two weeks. This makes available another type of test bird for studying the rôle of vitamin B<sub>1</sub> in the metabolism of pyruvic or lactic acid in brain tissue. The results of their tests are not entirely in agreement with those of the Oxford group. The Wisconsin investigators have found that there are no significant disturbances in lactate oxidation of brain tissue of avitaminous chicks. The heart tissue of these chicks showed a decreased rate of oxygen uptake in lactic acid and a decreased rate of removal of the acid. With the heart tissue, an increased oxygen uptake was produced by the addition of vitamin B<sub>1</sub>. The latter compound, however, was without effect on lactate oxidation by brain tissue. These discrepancies in results are not serious when it is recalled that only a short period was required for the development of the polyneuritis in the chicks, as compared to the thirty days required to produce head retractions in the pigeons. It may be that, in the more rapidly developing polyneuritis, disturbances in tissue metabolism may appear in the heart and possibly other organs before the demonstrable effects on the central nervous system are produced. When pyruvate serves as the substrate, the results of the two laboratories are in good agreement. In avitaminous brain tissue there is a decreased respiration in pyruvate substrate. The addition of crystalline vitamin B<sub>1</sub> brings back the lowered oxygen uptake to an almost normal level and increases the rate of pyruvate removal. Sherman and Elvehjem have also demonstrated that kidney tissue from normal and from polyneuritic chicks acts similarly with respect to pyruvic acid.

The in vitro evidence of the atypical metabolism of pyruvic acid in avitaminous pigeon and chick tissues has

led to the hypothesis that the syndrome of polyneuritis is directly caused by an accumulation of pyruvic acid. This idea now gains some support from a study of the metabolism of pyruvate in avitaminosis B<sub>1</sub> in the living animal. The Wisconsin workers<sup>4</sup> have followed the rate of removal of intravenously injected pyruvate from the blood of normal and of polyneuritic chicks. Pyruvate injected intravenously in normal chicks could not be significantly detected one minute after injections of amounts sufficient to produce a large theoretical increase in blood pyruvate. On the other hand injection of sodium pyruvate in polyneuritic chicks produced a sharp increase in blood pyruvate, which slowly returned to the normal level. These observations are consistent with the hypothesis that in polyneuritis there is a failure in the tissue metabolism of pyruvic acid. The possible relationships of this result to the gross pathologic changes developing in long sustained vitamin B<sub>1</sub> deficiency remain to be established.

## Current Comment

### BLOOD PHOSPHATASE IN DIAGNOSIS OF JAUNDICE

The significance of phosphatase in the blood has for some time been a subject of debate. Rothman and his co-workers<sup>1</sup> have recently reported a study of the blood-phosphatase based on all the cases of jaundice observed by them during the past three years and on a series of cases without jaundice and with none of the other pathologic states believed to influence phosphatase values. The cases of jaundice were classified in the orthodox manner under the heads of obstructive jaundice, hepatocellular or nonobstructive jaundice and hemolytic jaundice. The method of phosphatase determination employed by these investigators was a slight modification of Roberts' method. In many instances the phosphatase determinations were repeated at frequent intervals, and in most instances quantitative serum bilirubin determinations were done simultaneously. The phosphatase values in most of the cases of obstructive jaundice were found to have values of greater than 10 units, while in the nonobstructive cases the values were found to be 10 units or less. These investigators agree with others, notably Roberts, that a phosphatase value of 10 units may be considered the dividing line between cases of obstructive and non-obstructive jaundice. Furthermore, phosphatase determination seems to be of greater value than any other available test in differentiating between these two forms of jaundice. Hence it appears that the blood phosphatase reflects two mechanisms: that due to obstruction and that due to a more direct involvement of the liver parenchyma. When both of these disturbances are present, the extent of each can be roughly gaged by comparing the bilirubin with the phosphatase values.

4. Sherman, W. C., and Elvehjem, C. A.; *J. Nutrition* 12: 121 (Sept.) 1936.

1. Rothman, M. M.; Meranze, D. R., and Meranze, Theodore; *Blood Phosphatase as an Aid in the Differential Diagnosis of Jaundice*, *Am. J. M. Sc.* 192: 526 (Oct.) 1936.

3. Sherman, W. C., and Elvehjem, C. A.; *Biochem. J.* 30: 785 (May) 1936; *Am. J. Physiol.* 117: 142 (Sept.) 1936.

**MEDICOLEGAL CASES: 1931-1935**

Abstracts of medicolegal cases have been published weekly in *THE JOURNAL* since 1900. They reflect the many and varied medicolegal problems that often perplex the busy practitioner. They indicate as well the ways in which others have met, or failed to meet, difficult medicolegal situations. The interest that has been aroused by these abstracts has been shown by repeated requests from many physicians that they be made available in book form. An initial volume was published in 1932 containing the abstracts that appeared in *THE JOURNAL* during the calendar years 1926-1930 inclusive. Now a second volume, entitled "Medicolegal Cases: 1931-1935," will soon be ready for distribution. This second volume will embody abstracts that were published in *THE JOURNAL* from Jan. 1, 1931, to Dec. 31, 1935. It will comprise a table of cases, 813 pages of abstracts, and seventy-four pages devoted to a detailed, comprehensive index affording ready access to the many interesting points developed in the approximately 900 abstracts. The book will be bound, as was its predecessor, in durable library buckram, law book style. Physicians, lawyers and others interested in avoiding legal difficulties and in solving medicolegal problems when they arise will find this volume a useful and interesting addition to their reference libraries.

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## *Association News*

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### ABSTRACT OF MINUTES OF MEETINGS OF BOARD OF TRUSTEES HELD NOV. 15 AND 16, 1936

DR. HOWARD FOX TO SUCCEED DR. WILLIAM ALLEN PUSEY  
ON EDITORIAL BOARD OF ARCHIVES OF DERMATOLOGY AND SYPHILOLOGY

The resignation of Dr. William Allen Pusey from the Editorial Board of the *Archives of Dermatology and Syphilology*, to take effect on December 31, was accepted and the deep appreciation of the Board for the fine service he has rendered for so many years was expressed.

Dr. Howard Fox of New York was elected to succeed Dr. Pusey as editor in chief.

#### RESIGNATIONS FROM COUNCIL ON PHYSICAL THERAPY

The resignations of Dr. F. J. Gaenslen and Dr. George Miller MacKee from the Council on Physical Therapy, due to illness, were accepted. Dr. George Clinton Andrews of New York was elected to succeed Dr. MacKee. Dr. Gaenslen's successor will be announced later.

#### APPOINTMENTS

A standing committee of the Board of Trustees to study the problems of industrial medicine and a committee to determine the value of x-ray film with a paper base as a substitute for film with a gelatin base were appointed. The Board approved nominations submitted by the President for a committee to survey and study the problem of motor vehicle accidents and injuries therefrom and to report to the House of Delegates, in accordance with a resolution introduced in the House of Delegates at the Kansas City session. The composition of these committees will be announced when acceptances of the appointments have been received.

Dr. W. J. McConnell of New York was appointed to represent the American Medical Association on the Sectional Committee on Building Code Requirements and Ventilation of the American Standards Association; Dr. Edward Jackson of Denver, to succeed himself on the Sectional Committee on Standards of School Lighting, and Dr. Austin A. Hayden of

Chicago, Secretary of the Board of Trustees, to succeed Dr. Wendell C. Phillips (deceased) on the Committee on Sound Level Meters.

#### CHAIRMAN OF LOCAL COMMITTEE ON ARRANGEMENTS

The nomination of Dr. W. J. Carrington as chairman of the Local Committee on Arrangements for the 1937 session of the Association, to be held in Atlantic City, was confirmed.

#### SUBSTITUTION OF SUPPLEMENT TO JOURNAL FOR A. M. A. BULLETIN

The discontinuation of the publication of the *American Medical Association Bulletin* and the substitution therefor of a supplement to *THE JOURNAL* each week, to be devoted to organizational affairs, medical economics, the social aspects of medical practice and similar material, received approval.

#### ANNUAL REPORTS ON TYPHOID, DIPHTHERIA AND FOURTH OF JULY STATISTICS

The Board authorized continuation of the publication in *THE JOURNAL* of the typhoid and diphtheria statistics and the resumption of the publication of statistics of Fourth of July accidents.

#### CONFERENCE ON SYPHILIS

The Surgeon General of the United States Public Health Service appeared before the Board for a discussion of certain phases of the program of that service and expressed the desire to have the active cooperation of the medical profession, especially at this time, in connection with plans to be developed for the prevention and treatment of syphilis.

#### MISCELLANEOUS

Numerous other matters pertaining to the business and work of the Association were given full consideration.

#### COMMITTEES PREVIOUSLY APPOINTED

The composition of committees appointed at the meeting of the Board of Trustees in September is as follows:

Committee to Study Air Conditioning: Drs. William F. Petersen, Chicago; H. B. Williams, New York; Emery R. Hayhurst, Columbus, Ohio; Carey P. McCord, chairman, Detroit, and C. P. Yaglou, Boston.

Committee on Asphyxia: Drs. Paluel J. Flagg, New York; John S. Lundy, Rochester, Minn., and Thomas J. Vischer, Philadelphia.

Committee on Medicolegal Blood Grouping Tests: Drs. Karl Landsteiner, New York; Alexander S. Wiener, Brooklyn, and Ludvig Hektoen, Chicago.

Advisory Committee on Cosmetics of the Advertising Committee: Drs. C. Guy Lane, Boston; Joseph Jordan Eller, New York, and Francis E. Seneear, Chicago.

### RADIO BROADCASTS

The American Medical Association and the National Broadcasting Company are presenting the second series of dramatized health broadcasts under the title *Your Health*. The first broadcast in the new series, the thirty-second dramatized cooperative broadcast under the title *Your Health*, was given October 13. The theme for 1936-1937 differs slightly from the topic in the first series, which was "medical emergencies and how they are met." The new series is built around the central idea that "100,000 American physicians in great cities and tiny villages, who are members of the American Medical Association and of county and state medical societies, stand ready, day and night, to serve American people in sickness and in health."

The program will go out on the Blue network instead of on the Red network, as originally announced.

The topics are announced monthly in advance in *Hygeia*, the Health Magazine, and three weeks in advance in each issue of *THE JOURNAL*. The topics and speakers for the next three programs are:

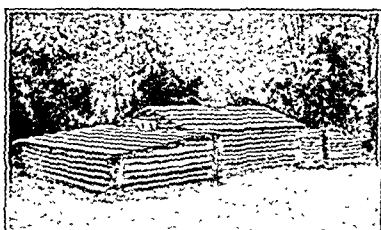
December 8. Heredity and Disease. Morris Fishbein, M.D.  
December 15. Milk. W. W. Bauer, M.D.  
December 22. The Gift of Health. Morris Fishbein, M.D.

The time of the broadcast is Tuesday afternoon at 4 o'clock central standard time (5 o'clock eastern time, 3 o'clock mountain time, 2 o'clock Pacific time).

## NEW JERSEY

**Society News.**—Dr. Joseph H. Globus, New York, addressed the Academy of Medicine of Northern New Jersey, Newark, November 19, on "Intracranial Hemorrhage: Its Anatomical Forms and Some of Their Clinical Features."—Dr. Christian P. Segard, Leonia, addressed the Mercer County Medical Society at Trenton, October 14, on "Late Developments in the Field of Nutrition."—A symposium on "The Injection Treatment of Hemorrhoids" was presented at the meeting of the Passaic County Medical Society, Paterson, October 8, by Drs. Rudolph V. Gorsch, New York, and Carroll D. Smith, Paterson.—Dr. Charles F. Geschickter, Baltimore, and Henry F. Vaughan, Dr. P.H., Detroit, were guest speakers at the annual meeting of the New Jersey Health and Sanitary Association in New Brunswick, November 20, on cancer and on relations between physicians and health departments with regard to immunization, respectively.

**Revolutionary War Hospital Reconstructed.**—The National Park Service has reconstructed an eighteenth century army hospital as part of its educational exhibit in the Morristown Historical National Park, Morristown, N. J. It is in Jockey Hollow, the site of the Continental Army encampment during the winter of 1779-1780 and one of three units in the Morristown park. The building is considered to be a close reproduction of the original hospital and it is planned



Eighteenth century army hospital.

to furnish it with displays of medical instruments, medicines and other contemporary material or reproductions to give visitors a picture of Revolutionary medical practices. The Morristown Historical National Park was established by an act of Congress approved March 2, 1933. The three units are Washington's headquarters, which contains a large collection of Washingtoniana, much other material typical of the Revolutionary period, and a library of nearly 2,000 volumes on early American history; Fort Mifflin, redoubt constructed at Washington's order in April 1777, and the Jockey Hollow Encampment sites. The picture is reproduced by courtesy of the park officials at Morristown.

## NEW YORK

**Society News.**—Dr. J. Ivimey Dowling, Albany, addressed the Medical Society of the County of Albany, November 24, on "Sinus Surgery as Applied to the Eye and General Health."—Mr. Elvin R. Edwards, former district attorney of Nassau County, addressed the Medical Society of the County of Nassau, November 24, on "The Doctor and the Lawyer."

**State Industrial Physicians Meet.**—Dr. Willis C. Temple, Corning, was elected president of the New York State Society of Industrial Medicine at the sixteenth annual meeting in Schenectady, November 5. The speakers included Drs. David J. Kaliski, New York, on "Workmen's Compensation Law as Related to Medical Practice"; Fred W. Stewart, New York, "Relationship of Single Trauma to Malignant Tumors," and William Gayle Crutchfield, Richmond, Va., "Reduction of Fracture—Dislocation of the Cervical Spine with Skeletal Traction." A symposium on hernia was presented by Drs. Arthur F. Bunker Wood, New York, and Norman L. Higinbotham, New York, and Edgar M. Stanton, Schenectady.

## New York City

**British Anatomist to Succeed Dr. Senior.**—Dr. Donald Sheehan, formerly demonstrator of anatomy, Victoria University of Manchester, Manchester, England, has been appointed professor of anatomy and director of the anatomic laboratories at New York University College of Medicine to succeed Dr. Harold Dickinson Senior, who retired in September. Dr. Sheehan, who will assume the position Sept. 1, 1937, received the degree of bachelor of medicine and surgery at Victoria University in 1929, doctor of medicine in 1932, and doctor of science on the basis of research on the anatomy of the autonomic nervous system in 1936.

**Society News.**—Drs. Leland S. McKittrick and Howard F. Root, Boston, addressed the Bronx County Medical Society, November 18, on recent progress in diabetic surgery and therapy, respectively.—At a meeting of the Bronx Gynecological and Obstetrical Society, November 23, the speakers were Drs. Samuel W. Boorstein and Sidney H. Freilich on "Restoring Function in Cases of Obstetrical Brachial Palsy" and Abraham B. Tamis, "Management of Secondary Amenorrhea."—Dr. David L. Satenstein addressed the Bronx Pathological Society, November 17, on "Dyskeratosis: Its Diagnostic and Prognostic Value in Grading Cancer of the Skin."

**Conné Medal Awarded to Dr. Van Slyke.**—The Philip A. Conné Gold Medal of the Chemists' Club of New York has been awarded to Donald Dexter Van Slyke, Ph.D., of the Rockefeller Institute for Medical Research, for "systematic and painstaking work of immense importance to clinical medicine," it was announced November 8. Dr. Van Slyke's work concerns chemistry and physiology of proteins and amino acids, enzyme action, methods of analysis of blood and gasometric micro-analysis, respiratory and renal functions, diabetes and nephritis. A native of New York, Dr. Van Slyke was graduated from the University of Michigan in 1905 and received the degree of doctor of philosophy there in 1907. Yale University conferred on him the honorary degree of doctor of science in 1925.

**Research on Chronic Disease.**—The Research Division of Chronic Disease, established in the department of hospitals last year, has received grants amounting to \$7,875 from the research council of the department, supplementing its annual grant of \$25,000 from the board of estimate. The complete scientific personnel was recently announced by Dr. Sigismund S. Goldwater, commissioner of hospitals, as follows: Dr. David Seegal, research director; Forrest E. Kendall, Ph.D., Drs. Dickinson W. Richards Jr., Arthur J. Patek Jr., Kenneth B. Turner, Alfred Steiner and James S. Mansfield. Studies to be promoted include the mechanism of arteriosclerosis, pulmonary emphysema and fibrosis, cirrhosis of the liver and hypertension, the rôle of infection in chronic diseases with particular reference to chronic nephritis, and chronic arthritis. Officers of the research council for the current year are Mr. Marshall Field, Drs. Goldwater, John A. Hartwell and Bernard Sachs. The scientific advisory committee includes Drs. Alfred E. Cohn, Eugene L. Opie, Walter W. Palmer, Alphonse R. Dochez, Douglas Symmers and William H. Park. Dr. Martin H. Dawson is president of the medical board of the research division.

## OHIO

**Personal.**—Dr. William A. Welsh, Youngstown, won the championship trophy at the annual golf tournament of the Ohio State Medical Association at the annual meeting in Cleveland, October 6, with a score of 163 for thirty-six holes.

**District Meeting.**—The Ninth Council District of the Ohio State Medical Association held a meeting at Gallipolis, November 24, with the following speakers: Drs. Frank E. Stevenson, Cincinnati, on scarlet fever; William M. Millar, Cincinnati, diagnosis and treatment of cancer, and Charles A. Doan, Columbus, treatment of certain blood dyscrasias.

**Society News.**—Dr. Dudley M. Stewart, Toledo, addressed the Sandusky County Medical Society, Fremont, October 29, on "Orthopedic Problems in General Practice."—Dr. Wallace B. Taggart, Dayton, addressed the Darke County Medical Society, Greenville, November 20, on "Chronic Lung Infections in Children."—Dr. Esther B. Tietz of Longview State Hospital, Cincinnati, addressed the Butler County Medical Society, November 4, on "Paper Diagnosis of Psychoses."—Dr. Hiram B. Weiss, Cincinnati, addressed the Hempstead Academy of Medicine, November 9, on "Hypertension and Hypotension."

## OREGON

**University News.**—The departments of anatomy and otolaryngology at the University of Oregon Medical School, Portland, have received a grant of \$400 from the American Academy of Ophthalmology and Otolaryngology to continue research on diseases of the sinuses under the direction of Olof Larsell, Ph.D., and Dr. Ralph A. Fenton.

## PENNSYLVANIA

**Society News.**—Dr. Charles G. Strickland, Erie, addressed the Warren County Medical Society, November 16, on "Ovarian Tumors."—Dr. Charles L. Brown, Philadelphia, addressed the Bucks County Medical Society, November 11, on "Cardiac Arrhythmias—Their Clinical Symptoms." At this meeting the committee on public relations and medical economics was empowered to ask the county commissioners for \$6,000 for the care of the indigent for one year, this amount to include the

salary of a secretary to be under the control of the society. The committee was also empowered to ask for money to pay for hospitalization of the indigent.—Drs. William J. Daw, Forty Fort, and William Baurys, Nanticoke, addressed the Luzerne County Medical Society, Wilkes-Barre, on "Hypertrophy of the Prostate" and "Internal Urinary Antiseptics," respectively.—Dr. Austin C. Lynn, Philipsburg, among others, addressed the Clearfield County Medical Society in Philipsburg, November 12, on "Diseases of the Hand."

### Philadelphia

**Dr. Müller Appointed Professor of Surgery.**—Dr. George P. Müller, formerly professor of clinical surgery at the University of Pennsylvania Graduate School of Medicine, has been appointed professor of surgery at Jefferson Medical College to succeed the late Dr. Edward J. Klopp. Dr. Müller, a graduate of the University of Pennsylvania, is surgeon to the Lankenau and Misericordia hospitals. He is a member of the board of regents of the American College of Surgeons, a member of the Philadelphia College of Physicians and a past president of the Philadelphia County Medical Society.

**Testimonial to Dr. Strittmatter.**—One hundred and twenty-five friends attended a dinner in honor of Dr. Isidor P. Strittmatter, November 5, at the Union League of Philadelphia. Dr. Louis H. Clerf was toastmaster. A souvenir book bearing the signatures of the guests was presented to Dr. Strittmatter. Among the speakers were Drs. Wilmer Krusen, Henry D. Jump, Francis A. Faught and Ross V. Patterson. Dr. Strittmatter, who is 76 years old, graduated from Jefferson Medical College in 1881. In 1923 he established the Strittmatter Award to be given to the physician presenting to the Philadelphia County Medical Society the most valuable contribution to the healing art in any given year; it was awarded for the first time in 1933. Dr. Strittmatter was president of the Philadelphia County society in 1928.

**Three Day Cancer Program.**—Several organizations joined in presenting a three day cancer program in Philadelphia November 30-December 2. The Pennsylvania Association of Tumor Clinics held a meeting November 30 at Lankenau Hospital, with surgical clinics and round table discussions in the x-ray department and the pathology laboratories of the hospital. The next two days were devoted to a cancer forum for the general public presented by the Women's Auxiliary of the Lankenau Hospital Research Institute for the Promotion of Cancer Research. Among the speakers were:

Dr. Francis Carter Wood, New York, Stepping Stones in Cancer Knowledge.

Dr. James J. Durrett, chief of the drug division, Food and Drug Administration, Washington, "Quacks" and Their Methods.

Mr. H. J. Klein, Metropolitan Life Insurance Company, New York, Insurance Companies in Relation to Cancer.

Clarence C. Little, Sc.D., Bar Harbor, Maine, Cancer Control.

Dr. Madge T. Macklin, London, Ont., The Brighter Side of Cancer.

Dr. Victor G. Heiser, New York, Cancer in Primitive Peoples.

The Philadelphia County Medical Society presented a symposium on malignant tumors, December 2, with Dr. Madge T. Macklin as a speaker on the hereditary background as one of the major causes of malignancy and Dr. Joseph McFarland, Philadelphia, on the environmental background. The sponsoring agencies were the American Society for the Control of Cancer, the Cancer Commission of the Medical Society of the State of Pennsylvania, the committee on cancer control of the Philadelphia County Medical Society, the State Federation of Pennsylvania Women and the Philadelphia Federation of Women's Clubs and Allied Organizations.

### Pittsburgh

**Research on Optical Glass.**—Investigations of the chemistry and physics of glass surfaces to aid in the development of scientific apparatus and ophthalmic instruments is under way at Mellon Institute of Industrial Research under the auspices of the Bausch and Lomb Optical Company of Rochester, N. Y. Frank L. Jones, Ph.D., a member of the staff since 1931, will be in charge of the new investigations, which will be concerned with the effects of environmental factors on the durability of the glass used in optical instruments.

### TEXAS

**Clinics at Fort Worth.**—The Tarrant County Medical Society sponsored the Fort Worth Medical and Surgical Clinics, October 6, with Drs. William L. Bonham, Leo J. Starry and Minard F. Jacobs, all of Oklahoma City, as guest speakers. Clinics were held at Baptist, Cook and Harris hospitals and dry clinics at the Medical Arts Building. Dr. John E. Daly was chairman of the committee in charge of arrangements.

**Personal.**—Dr. Alwin M. Clarkson, Dallas, has been appointed epidemiologist to the state department of health to succeed Dr. Charles D. Reece, Austin, who resigned.—Dr. Austin E. Hill, Dallas, has been appointed health officer of Smith County, and Dr. Lyman T. Cox, El Paso, of the Winkler County unit.

**State Surgical Meeting.**—Drs. John de J. Pemberton, Rochester, Minn., and Edward W. A. Ochsner, New Orleans, were guest speakers at the semiannual meeting of the Texas Surgical Society in Dallas, October 5-6. Dr. Pemberton spoke on "Surgery of the Colon" and Dr. Ochsner on "Prevention of the Reformation of Peritoneal Adhesions by Papain: A Clinical Consideration." Dr. Charles C. Green, Houston, was elected president.

**University News.**—Dr. Percival A. Duff, formerly of Los Angeles, has been appointed assistant professor of pathology at the University of Texas School of Medicine, Galveston, and Dr. Truman J. Blocker Jr. has been appointed associate professor of surgical pathology. Dr. Clarence S. Sykes has been promoted to the rank of associate professor of ophthalmology. Newspapers recently reported that Dr. Paul A. Woodward has resigned as associate professor of medicine and Dr. Loyd W. Sheekles Jr. has been promoted to be assistant professor of medicine. At the opening session of the fall term October 1 an address was made by Dr. Seth M. Morris, professor of ophthalmology, who is the only member of the original faculty of the school who has remained in continuous service. Dr. Morris will retire at the end of this year.

### WISCONSIN

**Society News.**—At a meeting of the Milwaukee Society of Clinical Surgery, November 24, the speakers were Drs. Claude S. Beck, Cleveland, on "Surgery of the Heart and Pericardium"; David A. Cleveland, Milwaukee, "Early Diagnosis of Brain Tumors," and Hugh McKenna, Chicago, "Treatment of Fractures of the Neck of the Femur."—Drs. Fred H. Albee, New York, and Francis D. Murphy addressed the Medical Society of Milwaukee County, November 13, on "Bone Carpentry" and "The Use of Insulin Protamine in the Treatment of Diabetes" respectively.—At a meeting of the Milwaukee Oto-Ophthalmic Society, November 10, the speakers were Drs. Robert Sonnenschein, Chicago, on "Reflexes or Referred Signs and Symptoms of Diseases of the Nose, Throat and Ear"; Samuel J. Pearlman, Chicago, "Modern Conceptions of Therapy of Malignant Growths of the Pharynx and Larynx," and Samuel Salinger, "Treatment of Injuries to the Face."—Drs. Charles W. Mayo and Edwin J. Kepler, Rochester, Minn., addressed the Eau Claire-Dunn-Pepin Counties Medical Society, in Eau Claire, October 26, on "Surgery of the Colon" and "Endocrinology" respectively.

### GENERAL

**Unauthorized Subscription Agent.**—The *Archives of Physical Therapy* reports that a Mr. H. Harvey of Toronto, who was authorized to represent that journal several months ago, is no longer an accredited agent. Harvey at first reported having taken some subscriptions but has not been heard from for some months. The American Congress of Physical Therapy has had complaints from physicians who have subscribed but have not received their journals.

**Health of Students Studied.**—The American Youth Commission is sponsoring a survey to be made of student health in sixty representative American colleges and universities, it is announced. Dr. Harold S. Diehl, dean of medical sciences, University of Minnesota Medical School, and Dr. Charles E. Shepard, associate professor of hygiene and physical education, Stanford University School of Medicine, will make the survey, and federal aid students will be employed to assist on the project. The youth commission is a subsidiary of the American Council on Education, Washington, D. C.

**Examinations in Otolaryngology.**—The American Board of Otolaryngology will hold an examination in Philadelphia June 7-8, 1937, during the annual session of the American Medical Association in Atlantic City. Prospective applicants for certificates should obtain blanks from the secretary of the board, Dr. William P. Wherry, 1500 Medical Arts Building, Omaha, Neb. In an examination prior to the annual meeting of the American Academy of Ophthalmology and Otolaryngology in New York in September, 120 candidates were examined and 103 were certified.

**Physicians Paid with Counterfeit Money.**—Search is being made for a man who has been victimizing physicians in New York City. His procedure is to request a physical examination, in payment of which he gives a counterfeit \$20

bill. Physicians are asked to note carefully the serial numbers of bills coming into their possession, as the counterfeit ones are light in color and somewhat irregular in impression and alinement. The swindler is described as being short, heavy set, 5 feet 8 inches tall, weighing about 212 pounds, and about 39 years of age, with black hair and brown eyes. He is said to speak with a pronounced Greek accent and has been using the name of George Alexander. Physicians are asked to notify the nearest police officer.

**Society News.**—Dr. Fletcher H. Colby, Boston, was chosen president of the New England Branch of the American Urological Association at its meeting in Boston, November 12, and Dr. George C. Prather, Boston, secretary.—The American Academy of Tuberculosis Physicians will meet in Atlantic City, June 7-8, 1937. Dr. Charles O. Giese, Colorado Springs, is president, and Dr. Arnold Minnig, Denver, is secretary.—Dr. Frank K. Boland, Atlanta, was elected president of the Southern Medical Association at its annual meeting in Baltimore, November 18. Drs. Sydney R. Miller, Baltimore, and Leander A. Riely, Oklahoma City, were elected vice presidents and Mr. C. P. Loran, Birmingham, was appointed secretary and general manager for a term of five years.

**News of Epidemics.**—Schools in Tulsa, Okla., were closed November 2 and those of Tulsa County a week later because of an outbreak of infantile paralysis. In the three weeks that preceded November 2, forty cases had developed in Tulsa; only seventeen cases had occurred in the city since 1928.—Thirteen persons were ill of typhoid in Edna, Pa., a mining town in Westmoreland County, November 12; the infection was traced to a spring and two wells. A spring was blamed as the source of infection in an outbreak affecting eleven persons at Eldersville, Pa., another mining community.—Schools were closed in Gibsonburg, Ohio, November 5, after thirty-seven cases of scarlet fever were reported. Schools at Chebanse, Ill., were closed November 2 because of an outbreak there. The state health department of Minnesota reported 292 cases of scarlet fever during October.

**Meeting of Western Surgical Association.**—The forty-sixth annual meeting of the Western Surgical Association will be held at the Hotel Muehlebach, Kansas City, Mo., December 11-12. Other speakers will include:

- Dr. Warren H. Cole, Chicago, Pneumococcus Peritonitis.
- Dr. Waltman Walters, Rochester, Minn., Should Gastric Resection Be Done for Duodenal Ulcer?
- Dr. Verne C. Hunt, Los Angeles, Benign Tumors of the Stomach.
- Dr. William E. Gallie, Toronto, Canada, Further Experiences with the Transplantation of Tendon and Fascia.
- Dr. H. Winnett Orr, Lincoln, Neb., A Special Surgical Procedure and the Orthopedic After-Care in Spina Bifida.
- Dr. George M. Curtis, Columbus, Ohio, The Surgical Significance of the Accessory Spleen.
- Dr. Charles L. Patton, Springfield, Ill., Hepatic Duct Strictures.

The annual dinner of the association will be held Friday evening December 11. Dr. Thomas G. Orr, Kansas City, will deliver the presidential address on "An Incision for Complete Breast Amputation," Saturday morning.

**The Woman's Auxiliary.**—The October News Letter of the Woman's Auxiliary of the American Medical Association reports the activities and future plans of various state auxiliaries. The Illinois auxiliary plans to assist the legislative committee of the Illinois State Medical Society during the meeting of the legislature which opens in January. Among this year's objectives for Illinois are building up a clientele for periodic health examinations, building an audience of lay followers for radio programs of the state society and the American Medical Association, keeping in touch with health material in lay publications, and cooperation with other organizations for promotion of health education. The New York auxiliary was organized in March and now has six county units; the new group helped to defeat a chiropractic bill in the last legislature. West Virginia members are compiling a history of the West Virginia State Medical Association and each county plans to make a study of some topic of medical research for the library of the Southern Medical Auxiliary. This auxiliary will sponsor an exhibit of doctors' hobbies at the 1937 convention. Georgia's auxiliary lays its chief emphasis on its student loan fund to educate children of Georgia physicians in Georgia medical schools. Among other activities, it also presents a health education program in cooperation with the Medical Association of Georgia and observes "Doctor's Day" March 30 each year. The aims of the Kansas auxiliary for the year include presentation of health education programs, health activities in cooperation with other organizations, and study of legislation concerning medicine. At the recent annual meeting of the Virginia auxiliary it was decided that the group should undertake the maintenance of a bed in a tuberculosis sanatorium for the use of needy physicians or their dependents.

## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Oct. 24, 1936.

#### The British Medical Association and the Nostrum Evil

In spite of efforts to check the nostrum evil, it continues unabated. The press is full of more or less fraudulent advertisements of preparations that will cure all sorts of diseases. Highly respectable journals are no exception and the religious press seems to be among the worst offenders. Perhaps the venders select it because there are people foolish enough to suppose that an advertisement in a religious publication is some sort of guaranty of respectability. For some years the British Medical Association has tried to grapple with the evil. During the years 1906 to 1909 it published analyses of secret remedies, which were made by the authority of the council. These were afterward collected and published in two books entitled "Secret Remedies" and "More Secret Remedies." These had extensive sale, though several of the more popular daily and Sunday newspapers refused to accept advertisements of the books, evidently because nostrums were extensively advertised in them. The analyses revealed to the public for the first time the worthless nature and trifling cost of many of the vaunted cures. Some of the venders were audacious enough to turn the exposure to account by offering their preparations for sale as "according to the formula of the British Medical Association." They thus pretended that they were acting under the authority of the association. One man actually opened a "B. M. A. Store." The association was involved in considerable expense and litigation in stopping this unauthorized use of its name.

The association's hope that the government would take the matter up was realized when a select committee was appointed by parliament to inquire into the sale of "patent" and proprietary medicines. The association was invited to give evidence. It recommended that: 1. On every packet of a nostrum offered for sale the name and quantity of each of its constituents should be given. 2. The label should constitute a warranty, and false description should be made an offense. 3. The provisions of the Food and Drugs Act should apply to proprietary medicines. The committee made a number of important recommendations. A department of state should be established for dealing with the advertising and sale of "patent medicines." There should be a register of their manufacturers, proprietors and importers and a complete statement of their ingredients and proportions, and the therapeutic claims made should be supplied. The advertisement and sale of cures for cancer, consumption, deafness, diabetes, paralysis, epilepsy, locomotor ataxia and rupture (without appliance) should be prohibited. It should be illegal to invite sufferers from any ailment to correspond with the vender of a remedy or to use fictitious testimonials. These recommendations were warmly approved by the British Medical Association, but the outbreak of the great war prevented anything further being done. After the war the association endeavored to secure legislation and helped in the drafting of two bills, which were unsuccessful. The failure of a bill that was made moderate so as to secure the support of newspaper and advertising associations and representatives of the drug trade was reported in THE JOURNAL, May 23, page 1829. It would have prevented only the worst forms of unscrupulous advertising, on the lines of the recommendations of the select committee, but it was "talked out." This deplorable result was brought about by misleading propaganda and by exploiting the suspicion of a section of the public that the medical profession in supporting the bill was actuated by selfish motives.

It is now stated in the *British Medical Journal* that the medical secretary of the association is asked almost daily for

information concerning the chemical composition and therapeutic activity of one or other of the numerous nostrums that excite the hopeful curiosity of patients. Unfortunately the particulars required are often not available. There is great difficulty in providing adequate information on the whole class of secret remedies, but the possibility of arranging for chemical analyses in special cases is under consideration. The association is also trying to secure the elimination from the press of advertisements that are obviously fraudulent or misleading. Although many newspaper proprietors are loath to take action that would diminish their income, considerable success has been achieved with the proprietors of the higher class newspapers and periodicals. The association's attention was drawn to objectionable advertisements of "patent medicines" in church magazines. Certain religious organizations were approached, and the Guild of St. Luke agreed to issue to clergymen of the Church of England a pamphlet on the harmful effects of "patent medicines" and a warning against their advertisement in church magazines. The association has also been disturbed by advertisement of "patent medicines" in some government publications, such as books of stamps, because the nature of the medium is liable to suggest that the products advertised have some sort of government approval. A promise has been obtained that remedies for certain diseases shall not be advertised, but not all undesirable advertisements are being refused. The association would like to secure control of the sale of "patent medicines" such as now exists in Canada.

#### The Association for the Advancement of Science

At the annual meeting of the British Association for the Advancement of Science, several papers of special interest to physicians were read.

#### THE MECHANISM OF EVOLUTION

Dr. Julian Huxley took for the subject of his presidential address "Natural Selection and Evolutionary Progress." He pointed out that three distinct problems were involved in evolution—the origin of species, the origin of adaptations and the origin and maintenance of long range evolutionary trends. As to the mechanism of evolution, the Lamarckian hypothesis might be neglected for lack of positive evidence and the atrogenetic view disregarded until it was seen how far the theory of natural selection would go. Natural selection was the only hypothesis (apart from creationist or mystical-vitalist ones) that would help account for any adaptive character the origin of which involved several separate steps. After a period in which Mendelism and natural selection appeared to be antagonistic, progress in genetics, aided by mathematical analysis, was once more favoring a selectionist interpretation. It was now realized that mutations might be of any extent, so that, by selection of very small ones, evolution might be very gradual. Further, it was recently discovered that the effects of mutation might be radically altered according to what other genes were present. Thus, through the selection of the appropriate combination of modifying genes, evolution might be made still more continuous.

The origin of species took place in several distinct ways. The chief three might be called the divergent, the convergent and the reticulate. Divergence was usually consequent on the isolation, either geographic or physiologic, of two stocks and was always gradual. Convergent species-formation was so far known only in plants; it arose suddenly by chromosome doubling after hybridization. In reticulate species formation, diverging stocks were crossed and produced new combinations, so that the lines of ancestry formed a network. One type was found in such plants as willows and roses, another in the human species. Analysis revealed the curious fact that, so far as one could be sure of a negative proposition, the course of evolution up to its present phase of conceptual thought and speech could

not have occurred along any other line. It could have been realized only in a vertebrate, among vertebrates only in a mammal, and in mammals only in one with a long arboreal past and the characteristic of producing only one offspring at birth.

#### THE DIET OF THE PEOPLE

Sir John Orr said that an international committee of physiologists had reported that a daily supply of  $1\frac{3}{4}$  pints of milk, one-fourth pound of meat, fish or poultry, one egg, an ounce of cheese, half a pound of potatoes, one-fourth pound of vegetables and legumes would provide all the proteins, minerals and vitamins which a mother needed. When this diet and a corresponding one for children were compared with the diet common in this country, the protective foods were hopelessly inadequate in the lowest income group. As income rose the diet approached closer and closer to the optimal standard, but the diet of nearly half the population was below this. Sooner or later an optimal diet would be available for everybody. A committee had recommended measures to bring milk consumption up to a level roughly the same as that recommended by the international committee. The present consumption of milk was less than half a pint per head daily. The average consumption of eggs should be raised from four to seven a head weekly. The greatest shortage was in fruit and vegetables.

#### PARIS

(From Our Regular Correspondent)

Oct. 25, 1936.

#### Surgical Treatment of Pulmonary Tuberculosis

Almost the entire June 30 and July 7 sessions of the Académie de médecine were devoted to a discussion of the surgical treatment of pulmonary tuberculosis by phthisiologists and surgeons well qualified in this rapidly developing field.

The first paper was by Prof. Emile Sergent and two of his associates, Pruvost and Mignot, who emphasized the necessity of close medicosurgical cooperation. They stated that an artificial pneumothorax offered the most effective means of assuring immobilization of the lung and that surgery is indicated only when collapse therapy is not applicable, after having been given a preliminary trial. Operation also is indicated when adhesions form following an insufflation and when the lesion for which the pneumothorax has been done is still active. In reviewing statistics, one must bear in mind that not only operative but also therapeutic results must be considered.

The division of bands binding the lung to the chest wall, diaphragm or mediastinum was first proposed by Jacobus as aiding an artificial pneumothorax by permitting the lung to collapse. It is not applicable to the extensive partial symphysis that may exist from the beginning of the pneumothorax treatment or be secondary to the latter. The best methods of diagnosis of the existence and location of true bands are radiography and pleuroscopy. In unilateral pneumothorax, the operative division of a band is indicated if it keeps a diseased lobe from collapsing and the expectoration is positive for tubercle bacilli. In bilateral pneumothorax cases, division of bands that interfere with the collapse of the lungs is indispensable. The contraindications to the division of such bands are activity of the pulmonary lesion as well as acute or chronic pleurisy. One should never operate too soon because of the danger of pleural complications and because of the fact that the bands are often very short and too vascular. As additional reasons for not operating too early on bands are the difficulty of compressing the lesions and the possibility that there may be secondary localizations. On the other hand, division of bands should be carried out very early in cases of bilateral pneumothorax in order to have a rapid collapse of the lungs. Division of bands may be encountered as an emergency measure in cases of severe

hemoptysis, extension of a cavity beneath the pneumothorax, rapid symphysis in a recent pneumothorax, certain lung perforations or pregnancy.

As to operations on the phrenic nerve, some have proposed as a routine to do a phrenicectomy following an unsuccessful collapse therapy before attempting a thoracoplasty. Now, one cannot regard indifferently a more or less definite paralysis of the diaphragm and thus diminish the value of the base of the lung when the latter is normal and thoracoplasty can be done later.

A careful radioscopy should precede a phrenicectomy, because a cavity in the central part of the upper lobe, relatively isolated and mobile, will probably not be influenced by such an operation. On the other hand, a cavity in the lower lobe that is constantly being drawn downward during inspiration will be favorably influenced by a phrenicectomy. To be successful, a considerable length of the phrenic should be removed and, if the paralysis is insufficient, the subclavian nerve must also be resected. Simple division, crushing or alcoholization of the phrenic nerve is followed by a paralysis, which may last from a few months to one or two years. Such temporary operations are reserved by the authors for such cases in which a thoracoplasty will probably be done later or the lesion although active tends to become stabilized and a thoracoplasty can probably be done a little later. The cases in which operations on the phrenic nerve promise favorable results are recent well localized lesions and nonencysted recent solitary cavities surrounded by parenchyma that is but little infiltrated. Apicolysis finds a limited field. It is indicated in quite small circumscribed relatively dry lesions presenting a tendency toward spontaneous retraction. Such lesions are frequently found in the apexes (supraclavicular regions) surrounded by normal parenchyma in patients whose general condition is a contraindication to a more extensive procedure. It can be employed also in association with other measures to collapse the lung.

Thoracoplasty should never be considered unless the lesions are unilateral and have not been active for from twelve to eighteen months, the patient is afebrile or nearly so, and the heart, which often is involved in chronic forms of tuberculosis, is in good condition. Thoracoplasty is to be avoided in destructive, caseating, active tuberculosis and employed only in cases in which the healing process is already manifested by the limitation of cavities and retractile sclerosis. A sanatorium should be one's first choice as the place in which thoracoplasty is to be performed. The most favorable cases are those in which the cavity is of moderate size, located rather near the surface and easy to collapse without much damage to the adjacent lung. The larger and more deeply seated the lesions, the more doubtful the result. It is a question whether one should attempt a thoracoplasty when sanatorium treatment has not improved the general condition, when there are remittent rises of temperatures, and when the lesions are not yet well localized. This holds also for those with large cavities with much secretion and emptying poorly, and for patients in whom the opposite lung is still under suspicion or at least still active. Old pneumothorax or oleothorax cases complicated by empyema and perforation can be greatly improved by thoracoplasty, provided the opposite lung is intact, the general condition is good and a preliminary pleurotomy is carried out.

The second paper was by Leon Berard of Lyons, who agreed with Sargent and his associates that, aside from cases of severe hemoptyses which persisted in spite of all treatment, thoracoplasty should be done only for inactive pulmonary lesions without pleural complications and preferably for lesions with a tendency to sclerosis, or with small cavities. The operation is indicated in only about 5 to 10 per cent of all cases. The number of ribs and the extent of each to be resected vary with the individual case. The immediate postoperative mortality has been reduced to from 4 to 8 per cent but neverthe-

less the later pulmonary complications cause it to rise during the first four months to 15 per cent. The mortality in sanatoriums where the patients have been well observed and prepared is only 10 to 12 per cent and the favorable end result as high as from 70 to 80 per cent, whereas in city hospitals the mortality rises to from 25 to 30 per cent and the favorable end results drop to from 50 to 60 per cent. This difference is due to the fact that hospital patients have not been given the preparatory rest and food which a sanatorium treatment gives.

The last paper of the June 30 meeting was by Robert Monod, a Paris surgeon who has had a large experience in resections of the lung. He raised the question whether intrapleural procedures should not be considered in cases in which pneumothorax and thoracoplasty have failed. In some cases partial resection of a lobe, even lobectomy or pneumectomy, might be seriously considered in view of recent more favorable results in nontuberculous conditions of the lung. One encounters solitary cavities of tuberculous origin well isolated by a fibrous shell of tissue from the adjacent normal parenchyma. Lobectomy hence could be justified in the following special cases: 1. Persistence or tendency to enlargement of a cavity in a collapsed lobe in which reexpansion as the result of a former thoracoplasty is no longer possible. 2. Persistence of a cavity the obliteration of which has not followed several thoracoplasties.

The discussion was continued at the July 7 meeting of the Académie de médecine by other surgeons who have had a large experience in this special field. Bernou and Fruchaud of Lyons gave the technic of partial thoracoplasty for lesions involving the pulmonary apices. Such an operation is followed by an ample collapse of the lung and the operative mortality is very low, whereas rib resections that are too extensive in either a vertical or a horizontal manner are often followed by a very high mortality, owing to the sudden emptying of a septic pulmonary parenchyma or to serious disturbances of the thoracic equilibrium (mediastinal displacement with its action on the large vessels and opposite lung). This is true of thoracoplasties involving the first, fourth, fifth and sixth ribs at one sitting, as well as resections of the same ribs that extend very far anteriorly, if done at a single sitting. On the other hand, it is a mistake to divide operative intervention into too many steps or sittings, because in the intervals too much induration and ossification of the chest wall take place, and it is especially to be noted that the pulmonary collapse resulting from too many sittings is not very satisfactory. Every operation is followed by a rise of temperature and lighting up of tuberculous lesions, which exhaust the patient.

The second paper was by the thoracic surgeon A. Maurer and his associate Rolland on the real value of thoracoplasty. In the early period, eleven or twelve ribs were resected with a resultant high mortality rate. Maurer was one of the first, during a second period, to point out that a larger portion of a rib should be removed, especially in the apical region, where the entire first and 15 to 18 cm. of the second and third ribs respectively were resected. Up to April 1935 the plan was to operate in several sittings on lesions that were quiescent, attack only one side, and individualize for each case. Up to that date only subperiosteal resections were done, but the rapid formation of new bone necessitated making the intervals between operations as short as possible. For some time Schoemaker has proposed destruction of the periosteum with solution of formaldehyde to overcome these new bone formations. A little later, Maurer substituted complete removal of the periosteum. Since this procedure has been employed by the authors, one can lengthen the intervals between sittings and thus select a favorable time, so that 518 patients have been operated in 1,342 sittings. The operative mortality has been very low

(3 per cent) even in public hospital cases. There have been 80 per cent good end results in sanatorium cases and 55 per cent in public hospital services.

Prof. E. Rist, phthisiologist, spoke on the indications for phrenicectomy. He said that the value of operations for the temporary or permanent exclusion of the action of the phrenic nerve had perhaps at times been exaggerated but, on the other hand, they had been discredited to an extent that was not justified. These operations occupy today a place that is by no means negligible. It was observed in the early period that a simple phrenicectomy was followed by a rapid regeneration of the nerve and that, as a result, complete paralysis of the diaphragm failed to follow. The classic procedure at present is to remove about 12 cm. or more of the nerve in order to prevent regeneration. In addition, the subclavian nerve and scalenus muscles are also divided. Cordey and Philardeau have substituted alcoholization of the nerve to secure a temporary paralysis of the nerve and to perform, if necessary, a phrenicectomy later. In fact, such an alcoholization has been followed in some cases by permanent paralysis, and it has been found that a regeneration may follow an exeresis of the nerve.

All present-day collapsotherapy measures are based on a theoretical conception of pathologic physiology, but the results have not confirmed such a conception; hence empiricism plays an important part in all collapsotherapy procedures. This is as true of artificial pneumothorax as of thoracoplasty, and incomparably so of artificially produced paralysis of the phrenic nerve. The primary hypothesis was that section or exeresis of the phrenic nerve on the affected side would result in immobilization of the corresponding half of the diaphragm in a marked expiratory position and subsequent reduction in volume of the lung, the lower lobe of which would be immobilized. Thus, in cases in which pneumothorax became impossible to carry out because of pleural adhesions, an incomplete collapse could be obtained by phrenicectomy. Experience, however, has shown that, after the latter, an incomplete immobilization resulted because of paradoxical movements and radioscopic evidence revealed that the paralyzed diaphragm moved in a direction opposite to that of the normal, the muscle rising during inspiration and descending during expiration. This inversion of the normal rise and fall is the most reliable radioscopic evidence of a paralysis of the diaphragm, whereas normal movements show that the motor innervation of the diaphragm has undergone restitution.

Furthermore, there is no parallelism between the reduction of volume of the lung and the efficacy of phrenicectomy. One can observe that tuberculous lesions heal in an incredible manner when the diaphragm has risen to only an insignificant degree. On the other hand, marked ascension of the diaphragm may not have any therapeutic influence on the pulmonary lesions. A priori, the only lesions that can be benefited are those in the lower lobe near the diaphragm, and it was found clinically, at first, that remarkably favorable results followed a phrenico-exeresis. The upper lobe is but little influenced by the inspiratory lowering of the diaphragm. Further experience, however, has demonstrated that apical lesions cicatrize and disappear at times soon after phrenico-exeresis; hence the indications for this operation are by no means limited to lesions at the base of the lung. The truth of the matter, according to Rist, is that our knowledge as to what is accomplished when the phrenic nerve is sectioned is still imperfect. It is possible that such an operation has an influence on the unstriated muscle fibers of the bronchi and of the parenchyma itself. Phrenicectomy yields the best results, however, in lesions situated near the base of the lung. Some phthisiologists (as Morin of Leysin) have been so well satisfied with phrenicectomy in apical lesions that they prefer it to artificial pneumothorax in such patients. Rist believes that the latter method

of collapse should be first given a trial because a phrenicectomy can always be done later, whereas the reverse is not true, because of the pleural adhesions that may follow an unsuccessful phrenicectomy, rendering an artificial pneumothorax impossible. Hence phrenicectomy is indicated only if it is impossible to collapse the lung by artificial pneumothorax.

Thoracoplasty should be attempted only under the most favorable condition, that is, when there is no longer any fever, the general condition is good, and suspected lesions in the opposite lung show evidence of inactivity. In such cases, during the waiting period, one may employ, as a useful preparatory measure, an alcoholization in order to obtain a temporary paralysis of the phrenic nerve. Even the permanent paralysis after a phrenicectomy is compensated for to a great extent by the lower intercostal and similar muscles. In the present state of development of collapsotherapy, phrenicectomy should not be discarded. Although of less value than artificial pneumothorax, it replaces the latter when it is a failure because of pleural adhesions. In cases in which thoracoplasty is impossible, the only available procedure is phrenicectomy, but the latter has its limits, which one must respect.

## BERLIN

(From Our Regular Correspondent)

Oct. 5, 1936.

### The Convention of Pediatricians

This year's convention of the German Pediatric Society was held at Würzburg. Professor Rietschel, the chairman, included in his address of welcome certain remarks that reflect the present-day trend in Germany. He raised the question of whether the pediatrician is truly a specializing physician in the strict sense of the term. A positive development, he said, has taken place; the actively practicing family physician is now so well trained in pediatrics that the services of the specialist in children's diseases, at least in the small and medium sized towns, may not be necessary. However, it may be supposed that pediatrics occupies as much a place in the education of the medical student as internal medicine.

The first major topic was "Antitoxic and Bacterial Serums." Gundel of Berlin emphasized that serotherapy is a biologic method in the truest sense of the word. Serotherapy still remains of indubitable fundamental worth (despite the fact that skeptical voices are raised in present-day Germany).

Speaking as a clinical pediatrician, Kleinschmidt of Cologne submitted a carefully formulated discussion based on his experimental and clinical investigation. He mentioned the many fruitless attempts, the many disappointed hopes, of the last ten years but declared that nevertheless restricted utilization of specific serums had become firmly established by experimentation. In this statement he struck at one of the weightiest principles of so-called Nature Medicine. Since it has been proved that the formation of antitoxin cannot be considered the curative factor in diphtheria, Kleinschmidt has for a long time been of the opinion that it is the nonspecific defense mechanisms of the organism that overcome the disease. The diminished effectiveness of antitoxin is particularly apt to manifest itself in cases of so-called toxic diphtheria and this is apparently due to hypersensitivity to toxin. Nevertheless the early injection of serum must not be discontinued for the present at least. The effectiveness of antitetanic serum is incontestable. Administration of antiscarlatinal serum is many times indicated. It apparently works in this way, however: that it alters the reaction of the organism against the pathogenic agent. Kleinschmidt questions the prophylactic action. Antidysenteric serum is of importance as antitoxic Shiga-Kruse serum; otherwise its effect is frequently only nonspecific. Administration of anticolon bacillary serum has not been proved superior to other measures in the diarrhea of

nurslings. The use of antipertussis serum has been unsatisfactory. The mortality from epidemic meningitis has not to date been definitely reduced through serotherapy. The outlook for success with type-specific serums is not great. Type I monovalent antipneumococcus serum is effective in lobar pneumonia and its prognosis in children is of itself good; the other type serum has to date been unproductive of success. Kleinschmidt closed his discussion with a statement the truth of which must be conceded by all critics: There are, he said, a whole group of precise indications for the application of specific serums, and no physician, if such indication is present, has the right to withhold from his patients the specific protective and curative serum. The significance of the organism's natural defense mechanisms and the importance of their influence should be fully recognized.

Schmidt-Burbach of Dessau then gave a report on comparative experimentation with various antidiphtheric inoculation serums. The best immunizing effect is produced by precipitate vaccine, alum-toxoid in particular. The Anhalt Serum Institute at Dessau now prepares an alum toxoid that contains 95 protective units per cubic centimeter; namely, 1 cc. of this vaccine has the same effect as 95 cc. of standard toxoid. Consequently, a single subcutaneous injection of 1 cc. suffices for protective inoculation. The serum reactions are slight. The protection appears in the third week. A simultaneous passive immunization undertaken in order to produce an immediate protection may be accomplished by the administration of 1,000 units of diphtheria antitoxin serum. The last named vaccine has already passed official inspection. The delegates were not all of one opinion with reference to the results of active diphtheria immunization.

The second major topic discussed was "Anemias and Hemorrhagic Diatheses in Childhood." M. B. Schmidt, pathologist, of Würzburg, who spoke first, differentiates two forms of destruction of the erythrocytes in anemia: the intracellular decurrent dissolution chiefly in the splenic pulp and the extracellular true hemolysis. The first type corresponds with the physiologic senile decomposition of the erythrocytes; it has its basis in the physical-chemical alterations in the stroma (colloid contraction) and is determined by the condition of the bone marrow, not by a change in the circulating blood. The second or extracellular type is accompanied by icterus, increase in the number of serum bilirubin and so on; it depends on a chemical injury to the lipid-containing surfaces and contributes to the continuance of an injury to the peripheral circulation independent of whether the erythrocytes leave the bone marrow in a normal or deficient condition. It is possible that the human blood pigment is not uniform, that there is a pathologic hemoglobin. The stroma, however, plays a leading part in the origin of anemia. Constitutional deficiencies in the bone marrow's capability of reaction are factors. Disturbance of the balance in the blood picture in ordinary so-called secondary anemias consists of increased productivity; that is, an increased new formation and an increased disintegration as a result of the rapid aging of the erythrocytes. The disorder depends also on the qualitative disturbance of erythropoiesis in the marrow, even if the damage extends to the peripheral blood, as well. There is also a decline in the number of the erythrocytes and in the amount of hemoglobin that takes place without increased disintegration, the result of the insufficient activity of the bone marrow. There are all gradations, from total disappearance of all cell systems of the marrow to pure hypochromic anemia. The cause of the last named disease in both children and adults is one of the achylously conditioned "chloranemias," deficiency in iron. Iron serves not only as material for hemoglobin but also as a stimulus to cell formation in the bone marrow and in the whole body. Only in the last named function may the iron be supplemented by copper.

M. B. Schmidt recognizes two possible forms of hypersplenic anemia: (1) that resulting from the physiologic, probably hormone, checking of the erythropoiesis of the splenic tissue and (2) that resulting from true hemolysis, the physiologic pattern for which is more uncertain. The anemia pseudoleukemia of children is etiologically not uniform; Schmidt considers the accompanying rachitis only as a stigma of the variant constitution. The unusual thing about the reaction is that erythropoiesis within and without the bone marrow runs its course like an erythroblastosis and that, on the other hand, the intramedullary and extramedullary leukopoiesis in any event assumes a hypertrophic character, which appears out of proportion to the contingent injury to the colorless cell systems. Among the clinical reports, Fanconi of Zurich discussed the primary anemias and erythroblastosis in childhood. In a number of the primary anemia cases, familial and racial factors exist; for example, in round-cell anemia (hemolytic icterus), marble bones disease, Cooley's anemia, sickle-cell anemia and congenital anemia of the pernicious variety. Primary disturbances in the bone marrow lead in greater or lesser degree to alterations in the bones, and these changes in turn lead to characteristic cranial and facial manifestations.

Rominger of Kiel spoke on secondary anemia in childhood. This disorder he designated a disturbance of the erythropoiesis through faulty nutrition, defective care of the child, intercurrent diseases and infections in particular. Essential to the development of the erythrocytes are inorganic iron, concentrates of copper, antianemic factors, hormones and vitamins. One must differentiate a hypochromic anemia and a hyperchromic anemia, a normoblastic, an erythroblastic and a leuko-erythroblastic reaction. Cow's milk anemia of nurslings is an iron anemia; goat's milk anemia depends not only on iron deficiency but, according to the nutrition of the goats, on vitamin deficiency and injury to the fat, tending toward sprue. The anemia of Heubner-Herter disease is related to severe goat's milk anemia and has been established as a kind of non-tropical sprue. Childhood pseudoleukemia seems not yet to be completely explained; certainly infections play an important part and lead to a subacute inflammation of the spleen with myeloid reaction and splenogenic hemolysis.

Finally, Catel of Leipzig discussed as the fourth paper on this topic the differential diagnosis of "hemorrhagic diatheses" in childhood. A majority of these disorders have nothing to do with "childhood diseases" but are to be etiologically interpreted quite otherwise, as scurvy, Osler's disease and so on. Catel distinguishes only six types of true hemorrhagic diatheses: familial hereditary hemophilia, sporadic hemophilia, purpura haemorrhagica, hereditary hemorrhagic thrombopathy and thrombasthenia, and finally congenital afibrinogenemia. A complete, thoroughgoing classification of the disease entities coming under the heading of hemorrhagic diathesis is as yet quite impossible. The best possible analysis of each individual case would first have to be undertaken, an analysis based on a uniform plan and exactly standardized procedures. The latter would first be worked out by a commission. A great number of individual contributions were submitted on this topic and on other aspects of pediatrics.

At the end of the congress a medical conference of the German Association for Protection of Nurslings and Infants took place. Principal topics of the papers read at this gathering were the unified administration and coordination of all infant welfare activities, breast feeding as the most vital of infant welfare problems, and care of the nursling in the lying-in hospital. Investigations carried out at Munich disclosed that, although at present almost all women attempt to suckle their infants, the period of lactation has been shortened within the last ten years. The reasons for this failure are not so much due to reluctance on the part of the mother as to defective

technic and faulty manifestation of instinct; women of a highly civilized environment should first of all be taught how to suckle. Educational courses and propaganda for mothers supplemented by the cooperative efforts of the welfare workers can do much to remedy the situation.

### JAPAN

(From Our Regular Correspondent)

Oct. 10, 1936.

#### The National Health

The Association for Encouraging Science in Japan, in response to the general expressions of dismay about the fall in the level of the national health, held its first meeting to consider methods for coping with the regrettable situation. Medical experts, from the cabinet departments, the deans of the medical departments of the imperial universities, and experts who were members of the association were present. It was decided to establish four sections of activity: eugenic, physical training, food, and clothing and shelter. The tuberculosis death rate is higher in Japan than anywhere else in the world. More than 130,000 cases of acute infectious diseases occur every year. Dysentery has shown a yearly increase. Trachoma and parasitic diseases are decreasing among students, school children and conscripts, but myopia and decaying of the teeth are increasing remarkably. Mental disease has also increased of late. The number of insane at present is 83,366, which means that there are more than twelve cases of insanity per 10,000 of population. The number of conscripts who pass the physical examination is decreasing every year, and the military authorities are afraid that half of the youth will be unable to pass the examination next year; in ten years this would bring about an alarming situation.

#### New Policy of Red Cross Society

The Japan Red Cross Society has decided on a new policy which aims to exercise a central control over the financial administration of the local branches, the administration of which heretofore has been independent of the central office. This situation caused competition between the branch offices in the different districts. It was at the same time a source of injustice, for prominent local persons, conspiring with the branch officials, often attempted to take advantage of the society for their own interest. The society will build two sanatoriums, one in Tokyo and the other in Hiroshima, for tuberculous persons who are forced to retire from military service. The former sanatorium will have 1,000 beds, the latter 1,500 beds. The new policy is estimated to require the expenditure of more than 16,000,000 yen every year.

#### Number of Medical Workers

The Home Office reports, according to the inquiry made at the end of last year, that the total number of physicians is 57,581. This is a remarkable increase, being 2,565 over the previous year and an increase of 6,789 over the year 1933. It is expected that the total will be 60,000 before long. Of these, 55,597 are practitioners, as against 49,301 in the previous year, showing an increase of 2,296. Every 10,000 of population has 7.45 practitioners, while in the previous year it had 12.45. On an average, there is one practitioner to 1,342 of population; 785 in large cities, 2,049 in towns or villages. The number of the midwives is 59,560, an increase of 1,280 over the previous year. Every 10,000 of population has 8.60 midwives. The number of nurses is 106,857. The number of dentists is 20,010, an increase of 1,102 as compared with the previous year, and out of them 18,428 are engaged in practice. Every 10,000 of population has 2.66 dentists. The number of pharmacutists is 24,957. The number of irregular practitioners is 20,204, of whom 5,970 are engaged in electrotherapy, 1,466 in ray treatment and 2,731 in heat treatment.

### A Rare Medical Diary

That the Dutch language was studied in Japan as far back as the middle of the eighteenth century is shown in the "Beginning of Dutch Study," written by Gempaku Sugita in 1815. This book has been valued as the key to the secret of the early stage of Dutch medicine introduced into this country in that century. Unfortunately the life of the author was only dimly known for lack of a biography. Recently by accident a priceless diary consisting of nine volumes, each containing about fifty pages of Japanese paper, was found in the library of the author's great-great grandchild. It contains records of daily events, chiefly concerning medicine during about twenty years in the middle of the eighteenth century. The worm-eaten pages are hard to read, and every means is now being employed to mend them. It contains such details as the price of medicine sold by the doctor to patients at that time, and the fee for a doctor's visit. It is miraculous that such a document has escaped the frequent disasters in Tokyo.

### MOSCOW

(From Our Regular Correspondent)

Oct. 26, 1936.

#### Training the Junior Medical Staff

Only recently has the question of training the junior medical staff been given much attention. To improve these bad conditions, the Council of People's Commissars issued September 8 a decision about the training of junior medical practitioners ("feldshers"), midwives, laboratory workers and others. The existing medical "technikums"—middle schools—will be reorganized in: (a) junior medical schools with a three year course, (b) midwifery schools with two years' study, (c) schools for medical nurses and nursery nurses and (d) one year courses for medical laboratory workers. In the coming year, 158,270 persons will be enrolled in all those schools.

For the four year training of stomatologists there will be two new stomatologic institutes founded at Kazan and Smolensk. Dentists will be trained in dental schools for three years. Pharmacutists of high qualification are to be trained in special pharmaceutic institutes with a four year course. Assistant pharmacutists are to be trained in special schools with a three year course, including one year of practical work. An apprenticeship for assistant pharmacutists in drug stores is permitted. This year 4,720 persons will be admitted to pharmaceutic schools and as apprentices.

#### The Moscow Cosmetic Institute

The Institute of Cosmetics and Hygiene will be opened in November in Moscow. It will provide treatment for the skin and hair, and gymnastics for the correction of obesity. The work of the institute will be under the guidance of dermatologists and physical therapists, who will also do research work.

#### Completion of Large Medical Encyclopedia

Some days ago the publication of the thirty-five volume edition of the Large Medical Encyclopedia was completed. It was accomplished under the auspices of Prof. Nicolas A. Semashko, former public commissar of health, and was begun eight years ago. More than 1,700 authors participated in the compilation of the encyclopedia, including twenty academicians, 692 professors and 1,006 scientific workers. The volumes have 6,396 articles containing 80,000 scientific terms and cover ninety-six subjects of medicine or closely allied sciences.

#### D'Herelle to Direct Institute

An all-union institute of bacteriophage is being erected in Tbilisi (former Tiflis, Georgian Soviet Republic). The founder of the bacteriophage theory, Felix d'Herelle, will be the director of this institute.

## Marriages

EDMUND MURDAUGH ELLERSON, Washington, D. C., to Miss Elsie Boyd Tucker of Richmond, Va., September 26.

HARRY HANSEN, Plainfield, N. J., to Miss Flora Gray Fraser of Englewood in Palisades Park, September 19.

EUGENE PAUL CAMPBELL, Monrovia, Calif., to DR. REBA M. LOWE of Reisterstown, Md., October 3.

EMIL UHLEIN DILLENBACK to Mrs. Fuchsia Carrick Fouser, both of Springfield, Mass., October 31.

EDWARD H. WYMAN to Miss Martha M. Mulford, both of Burlington, N. J., September 19.

NICHOLAS J. CHETT, Reading, Pa., to Miss Margaret Trotman in Elizabeth, N. J., recently.

FRANCIS EMORY BELL, Palatka, Fla., to Miss Lourline Seyden of Savannah, Ga., November 8.

CLARENCE SAMUEL BRANSON to Miss Audeen Mervin, both of St. Joseph, Mo., July 20.

ALBERT C. SANTY, New York, to Miss Rosalyn Walsh of Garfield, Ga., September 19.

## Deaths

Edwin Richard Hodge, Brooklyn; Georgetown University School of Medicine, Washington, D. C., 1892; veteran of the Spanish-American War, the Philippine Insurrection and the World War; served at the Army Medical Museum as an anatomist and later as chemist from June 1890 until Aug. 10, 1917, when he resigned to enter on active duty as an officer of the U. S. Army medical corps reserve; was commissioned a captain during the World War, during which time he was in charge of the chemical laboratory at the Army Medical School, Washington, D. C., and until Nov. 30, 1920, when he was honorably discharged from the military service; was reinstated in the position of chemist, retaining charge of the laboratory at the Army Medical School, and later at the New York General Depot, Brooklyn, until his civil service retirement June 30, 1932; formerly a member of the tenth revision committee of the U. S. Pharmacopeia; aged 76; died, September 18, in the Veterans Administration Facility, New York; of pneumonia.

Gustavus Ingomar Hogue, Milwaukee; Northwestern University Medical School, Chicago, 1899; fellow of the American College of Surgeons; formerly associate professor of ophthalmology, Milwaukee Medical College and the Marquette University School of Medicine; veteran of the Spanish-American and World wars; attending ophthalmologist to the Milwaukee County Hospital, Milwaukee, and the Milwaukee Hospital for Mental Diseases, Wauwatosa; ophthalmologist-in-chief to the Mount Sinai Hospital; aged 64; died, September 28, of coronary occlusion.

George Metzger Todd, Toledo, Ohio; University of Pennsylvania Department of Medicine, Philadelphia, 1894; president of the Association of Surgeons of the Chesapeake and Ohio Railway; formerly medical attaché of the embassy in London, England; at one time on the staff of the City Hospital, Akron, and city health commissioner of Akron; formerly visiting gynecologist to St. Vincent's, Toledo, Women's and Children's, and County hospitals; aged 65; died, September 5, of intestinal obstruction.

Carl Eugene Munger, Waterbury, Conn.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1883; member of the Connecticut State Medical Society and the American Laryngological, Rhinological and Otological Society; fellow of the American College of Surgeons; consulting laryngologist to the Waterbury Hospital; aged 78; died suddenly, September 26, of heart disease, while on the Cunard-White Star liner *Samaria*.

John V. Gallagher, Cleveland; Western Reserve University Medical Department, Cleveland, 1891; past president of the Cleveland Academy of Medicine; fellow of the American College of Surgeons; formerly associate professor of surgery, Cleveland College of Physicians and Surgeons; visiting surgeon to St. Alexis and St. John's hospitals; consulting surgeon to St. Ann's Maternity Hospital; aged 71; died, September 26, of pneumonia.

Royal Stuart Adams, San Antonio, Texas; University Medical College of Kansas City, Mo., 1912; member of the Associated Anesthetists of the United States and Canada; past president and secretary of the Bexar County Medical Society; secretary-treasurer of the Bexar County Library Association; aged 46; died, September 21, of cerebral hemorrhage, chronic nephritis and arteriosclerosis.

George A. Wash, Gibson City, Ill.; University of Louisville (Ky.) Medical Department, 1894; member of the Illinois State Medical Society; for ten years a member of the city board of health and board of education; past president and secretary of the Ford County Medical Society; member of the medical staffs of St. Joseph's and Mennonite hospitals, Bloomington; aged 68; died, September 21.

Theodore Calvin Hays, Canton, Ill.; College of Physicians and Surgeons, Keokuk, Iowa, 1889; at one time professor of gynecology and obstetrics at his alma mater; past president of the school board and formerly city physician; served during the World War; on the staff of the Graham and Murphy Hospital; aged 71; died, September 21, of pneumonia.

Charles Christian Walker, Detroit; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1904; member of the American Academy of Ophthalmology and Otolaryngology; on the staffs of the Harper Hospital and the Children's Free Hospital; aged 61; died suddenly, September 28, of heart disease.

Walter D. Haynie, Kingston, Okla. (registered by Oklahoma state board of health, under the Act of 1908); member of the Oklahoma State Medical Association; president and formerly secretary of the Marshall County Medical Society; aged 60; died, September 21, in the Wilson N. Jones Hospital, Sherman, Texas.

Gaspard Lemire Marsolais, St. Eustache, Manin, Canada; School of Medicine and Surgery of Montreal, Faculty of Medicine of the University of Laval at Montreal, 1894; Laval University Faculty of Medicine, Quebec, 1895; aged 64; died, September 14, in St. Boniface (Manin) Hospital, of coronary thrombosis.

John Wesley Hutchison, Saginaw, Mich.; Chicago Homeopathic Medical College, 1897; fellow of the American College of Surgeons; past president of the Saginaw County Medical Society; member of the senior staff of the Saginaw General Hospital; aged 66; died, September 13, of coronary occlusion.

George Francis Patton, New York; Baltimore Medical College, 1910; served during the World War; on the staffs of the Bronx Eye and Ear Infirmary; and the Manhattan Eye, Ear and Throat Hospital; honorary surgeon of the New York Police Department; aged 49; died, September 14, of heart disease.

William Lester Barnes, Lexington, Mass.; Harvard University Medical School, Boston, 1904; school director; at various times town physician, health officer, and chairman of the board of health; aged 58; died, September 28, at a hospital in Boston, of cerebral thrombosis, diabetes mellitus and hypertension.

William Patrick O'Rourke, Los Angeles; Toledo Medical College, 1897; formerly medical inspector for the health department of Seattle and medical director of the city's parochial schools; at one time superintendent of the King County Hospital, Seattle; aged 70; died, September 27, in Las Vegas, Nev.

John James Mason, Vancouver, B. C., Canada; Western University Faculty of Medicine, London, Ont., 1902; past president of the Vancouver Medical Association; fellow of the American College of Surgeons; gynecologist and obstetrician to the Vancouver General Hospital; aged 55; died in September.

Darwin T. Powelson, Johnstown, Pa.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1897; at one time president of the board of health of Homestead, and past president and secretary of the school board; aged 64; died, September 27, in the Conemaugh Valley Memorial Hospital.

Harry Leslie Langnecker, San Francisco; Johns Hopkins University School of Medicine, Baltimore, 1906; associate professor of medicine (physical therapy), Stanford University School of Medicine; served during the World War; aged 58; died, September 23, in the Palo Alto (Calif.) Hospital.

Edward Reginald Secord, Brantford, Ont., Canada; McGill University Faculty of Medicine, Montreal, Que., 1900; past president of the Ontario Medical Association; fellow of the American College of Surgeons; surgeon to the Brantford General Hospital; aged 57; died, September 24.

**Samuel Henry McKewen**, Windsor, Vt.; College of Physicians and Surgeons, Boston, 1906; member of the Vermont State Medical Society; on the staff of the Windsor Hospital; aged 60; died, September 10, in the Claremont (N. H.) General Hospital, of acute dilatation of the heart.

**William Jefferson Mockler**, Springboro, Ohio; Ohio Medical University, Columbus, 1902; member of the Ohio State Medical Association; aged 60; formerly on the staff of the Miami Valley Hospital, Dayton, where he died, September 23, of arteriosclerosis and bronchopneumonia.

**Kenneth Kenyon Linson**, Woodhaven, N. Y.; Baltimore Medical College, 1907; during the World War served as chief medical examiner for a draft board; member of the staff of the Mary Immaculate Hospital, Jamaica; aged 56; died suddenly, September 10, of angina pectoris.

**Lenthal Azel Bollman** Ⓢ Dallas, Ore.; Willamette University Medical Department, Salem, 1906; fellow of the American College of Surgeons, member of the staffs of the Dallas (Ore.) Hospital and the Salem (Ore.) General Hospital; aged 63; died, September 29, of pneumonia.

**William Ferguson Peebles**, Clinton, Ky.; Hospital College of Medicine, Louisville, 1905; member of the Kentucky State Medical Association; served during the World War; aged 58; died, September 11, in the Illinois Central Hospital, Paducah, of carcinoma of the pancreas.

**Harold Edson Miner**, Springfield, Mass.; University of Maryland School of Medicine, Baltimore, 1905; member of the Massachusetts Medical Society; district health officer for the state department of public health; aged 54; died suddenly, September 15, of coronary thrombosis.

**Leighton Wherry Jones** Ⓢ Johnstown, Pa.; Jefferson Medical College of Philadelphia, 1897; for many years city physician; formerly on the staff of the Memorial Hospital; aged 75; died, September 18, in the Lee Hospital, of septicemia following an infection of the scalp.

**Daniel F. Jackson** Ⓢ Pittsburgh; Western Pennsylvania Medical College, Pittsburgh, 1902; fellow of the American College of Surgeons; served during the World War; member of the staff of the Montefiore Hospital; aged 57; died, September 6, of coronary thrombosis.

**Archibald Leonard Offield** Ⓢ Burlingame, Calif.; Cooper Medical College, San Francisco, 1905; fellow of the American College of Surgeons; formerly superintendent of the Community Hospital, San Mateo; aged 59; died, September 17, of endothelioma of the pleura.

**Thomas Albert Watterson**, Manotick, Ont., Canada; University of Toronto Faculty of Medicine, 1904; served with the Canadian forces during the World War; formerly on the staffs of St. Luke's Hospital and the Civic Hospital, Ottawa; aged 61; died, September 3.

**William Ridgway Rothe** Ⓢ Cincinnati; Temple University School of Medicine, Philadelphia, 1911; member of the Medical Society of the State of Pennsylvania; medical examiner for the Pennsylvania Railroad; aged 47; died, September 8, at his home in Newport, Ky.

**Edwin Curtis Garvin**, Cleveland; Western Reserve University Medical Department, Cleveland, 1894; member of the Ohio State Medical Association; served during the World War; aged 64; died, September 25, in St. Alexis Hospital, of pneumonia.

**Jesse Lee Prince**, Stevenson, Ala.; Medical Department of the University of Alabama, Mobile, 1899; member of the Medical Association of the State of Alabama; aged 61; died suddenly, September 29, of cerebral hemorrhage and arteriosclerosis.

**Charles C. Nail**, Moore, Okla.; Arkansas Industrial University Medical Department, Little Rock, 1889; formerly a druggist; member of the school board; aged 76; died, September 26, in a hospital at Oklahoma City, of bronchopneumonia.

**Walter Parker Irwin**, Florence, Kan.; Western Eclectic College of Medicine and Surgery, Kansas City, 1909; Kansas City Hahnemann Medical College, 1910; member of the Kansas Medical Society; aged 63; died, September 12, of heart disease.

**David F. Morton**, Perryville, Mo.; Missouri Medical College, St. Louis, 1883; past president of the Perry County Medical Society; aged 78; died, September 4, in the Barnes Hospital, St. Louis, of carcinoma of the bile ducts and myocarditis.

**Henry Adolph Owenson**, Arnegard, N. D.; Keokuk Medical College, College of Physicians and Surgeons, 1906; member of the North Dakota State Medical Association; formerly health officer; aged 51; was found dead, September 11.

**Samuel Rankin Ratliff**, Vancleave, Miss.; Tulane University of Louisiana Medical Department, New Orleans, 1901; member of the Mississippi State Medical Association; aged 63; died, September 16, of carcinoma of the stomach.

**Amedee Marien**, Montreal, Que., Canada; School of Medicine and Surgery of Montreal, 1890; emeritus professor of clinical surgery at his alma mater; on the staff of the Hotel Dieu de St. Joseph; aged 70; died, September 1.

**James Henry Dixon**, Portsmouth, N. H.; Medical School of Maine, Portland, 1898; formerly city physician and chairman of the board of health; aged 58; died, September 20, in the Portsmouth Hospital, of cerebral hemorrhage.

**Robert Bruce Layman**, Knoxville, Tenn.; University of Louisville (Ky.) Medical Department, 1898; member of the Tennessee State Medical Association; served during the World War; aged 64; died suddenly, September 26.

**J. Ernest Dowdy**, Sandy Ridge, N. C.; University of Maryland School of Medicine, Baltimore, 1909; aged 50; died, September 19, in a hospital at Martinsville, Va., of carcinoma of the left axilla due to roentgen ray burns.

**Benjamin W. Best**, Greensboro, N. C.; College of Physicians and Surgeons, Baltimore, 1884; aged 75; formerly on the staff of the Clinic Hospital, where he died, September 24, of injuries received in an automobile accident.

**William Filmer Coy**, Vancouver, B. C., Canada; Queen's University Faculty of Medicine, Kingston, Ont., 1886; M.R.C.S., England, 1887; served with the Canadian Army during the World War; aged 73; died in September.

**John Franklin Robinson**, Manchester, N. H.; Harvard University Medical School, Boston, 1886; member of the New Hampshire Medical Society; aged 73; died, September 5, of arteriosclerosis and cerebral thrombosis.

**Arthur Charles Pariente**, New York; University and Bellevue Hospital Medical College, New York, 1932; member of the Medical Society of the State of New York; aged 27; died, September 18, of regional ileitis.

**Joseph Wilton Hope**, Hampton, Va.; Medical College of Virginia, Richmond, 1888; for many years county health officer; formerly on the staff of the Dixie Hospital; aged 70; died, September 3, of cerebral hemorrhage.

**John Ford Burnet Benton**, Valley Park, Miss.; Tulane University Medical Department, New Orleans, 1907; member of the Mississippi State Medical Association; aged 67; died, September 29, of diabetes mellitus.

**Newton I. Tibbits**, Detroit; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1884; on the staff of the Detroit Tuberculosis Sanitarium; aged 77; died, August 22, in Grand Rapids.

**Charles Fremont Brock**, Waltham, Mass.; University of Vermont College of Medicine, Burlington, 1884; aged 74; died, September 25, of cerebral hemorrhage, carcinoma of the urinary bladder and chronic nephritis.

**Alexander Randall Griffith**, Montreal, Que., Canada; New York Homeopathic Medical College and Hospital, 1891; medical superintendent of the Montreal Homeopathic Hospital; aged 71; died, September 2.

**George Henry Cowles**, Woodhull, Ill.; Rush Medical College, Chicago, 1896; aged 65; died, September 29, of coronary disease while driving his automobile, which went over an embankment into the lake.

**John Caldwell Foster**, Clarksville, Texas; University of Louisville (Ky.) Medical Department, 1869; Confederate veteran; aged 93; died, September 23, in a hospital at Paris, of cerebral hemorrhage.

**Elwyn Winslow Capen**, Monson, Mass.; Boston University School of Medicine, 1902; formerly member of the school committee; aged 60; died, September 19, of carcinoma of the prostate and bladder.

**Nathaniel Norris Allen** Ⓢ Houston, Texas; Kentucky School of Medicine, Louisville, 1898; member of the American Academy of Pediatrics; aged 62; died, September 22, of coronary thrombosis.

**Henry Wilkins Lewis**, Jackson, N. C.; University of the City of New York Medical Department, 1877; member of the Medical Society of the State of North Carolina; aged 80; died, October 19.

**Charles Howard Lodor**, Eustis, Fla.; University of Pennsylvania Department of Medicine, Philadelphia, 1882; formerly a practitioner in Chicago; aged 77; died, October 2, in a hospital at Orlando.

**Joseph Vale Cleaver**, Akron, Ohio; University of Pennsylvania Department of Medicine, Philadelphia, 1887; for many years on the staff of the City Hospital; aged 78; died, September 26.

**Orrin P. Maxson**, Weaverville, N. C.; College of Physicians and Surgeons, Chicago, 1883; formerly a practitioner in Waukegan, Ill.; aged 81; died, September 28, of duodenal ulcer and cystitis.

**Henry Charles Bikle**, York, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1936; aged 28; intern at the York Hospital, where he died, September 29, of pneumonia.

**Samuel William Greenbaum**, New York; University and Bellevue Hospital Medical College, New York, 1899; aged 61; died, September 16, of cirrhosis of the liver and bronchopneumonia.

**Daniel Webster Evans** Ⓢ Scranton, Pa.; College of Physicians and Surgeons of Chicago, 1894; aged 70; died, September 28, of arteriosclerotic heart disease and acute coronary thrombosis.

**W. J. Hammond**, Tellico Plains, Tenn. (licensed in Tennessee in 1906); aged 78; died, September 10, in the Fort Sanders Hospital, Knoxville, of carcinoma of the prostate and myocarditis.

**Eugene Francois Brindjone**, Butte, Mont.; Tulane University of Louisiana Medical Department, New Orleans, 1908; aged 55; died, September 27, of a self-inflicted gunshot wound.

**Glenn Henry Miller** Ⓢ Omaha; University of Nebraska College of Medicine, Omaha, 1919; on the staff of the Methodist Hospital; aged 45; died, September 29, of heart disease.

**Edward F. Luckett** Ⓢ Cheneyville, La.; Tulane University of Louisiana Medical Department, New Orleans, 1899; aged 61; died, September 29, of coronary occlusion and hypertension.

**Harry Collier Mix**, Oak Park, Ill.; Northwestern University Medical School, Chicago, 1909; served during the World War; aged 61; died, September 14, of cerebral hemorrhage.

**Harold Eugene Rodgers** Ⓢ Albuquerque, N. M.; Medical College of the State of South Carolina, Charleston, 1923; aged 40; died, September 9, in St. Joseph's Hospital, of typhoid.

**James Edward Lovering**, Lethbridge, Alta., Canada; McGill University Faculty of Medicine, Montreal, Que., 1908; chairman of the school board; aged 64; died, August 11.

**Charles J. Turpin**, Denver; University of Pennsylvania Department of Medicine, Philadelphia, 1895; aged 67; was found dead, September 2, of a self-inflicted bullet wound.

**William Parmilee Williams** Ⓢ Blackshear, Ga.; Bellevue Hospital Medical College, New York, 1888; aged 69; died, September 24, in the Ware County Hospital, Waycross.

**Benjamin Talbot Ferguson**, Jamestown, La.; Memphis (Tenn.) Hospital Medical College, 1904; aged 57; died, September 13, in Arcadia, of a self-inflicted bullet wound.

**John Moses Maness**, Hamlet, N. C.; University of North Carolina School of Medicine, Chapel Hill, 1909; aged 58; died, September 24, of myocarditis and cirrhosis of the liver.

**Edward Cazneau Newton**, East Milton, Mass.; Bellevue Hospital Medical College, New York, 1887; aged 73; died, September 1, of bronchial asthma and myocarditis.

**Frederic Remington**, Rochester, N. Y.; Harvard University Medical School, Boston, 1888; died, September 12, of acute lymphatic leukemia and lobar pneumonia.

**David A. Swift**, Butler, Tenn.; University of Tennessee Medical Department, Nashville, 1904; aged 59; died, September 20, in Amantha, N. C., of cerebral hemorrhage.

**Mary Ella Mann**, Nantucket, Mass.; New York Medical College and Hospital for Women, 1882; aged 77; died, September 26, of arteriosclerosis and myocarditis.

**D. Harrison Billmeyer**, Plains, Mont.; Jefferson Medical College of Philadelphia, 1884; aged 73; died, September 26, of peptic ulcer and hemorrhage of the stomach.

**Thomas Young Carter**, Westmoreland, Tenn.; University of Tennessee Medical Department, Nashville, 1905; aged 55; died, September 28, of cerebral hemorrhage.

**Arturo Cairone**, New York; Regia Università di Napoli. Facoltà di Medicina e Chirurgia, Italy, 1908; aged 53; died suddenly, September 19, of arteriosclerosis.

**Gordon Moss Gafford**, Colorado Springs, Colo.; Barnes Medical College, St. Louis, 1886; aged 73; died, September 28, of coronary occlusion and arteriosclerosis.

**Benjamin F. Wilson**, Golden City, Mo.; Eclectic Medical Institute, Cincinnati, 1882; aged 76; died, September 15, of cerebral hemorrhage and arteriosclerosis.

**Mathew McGonigal**, Loyal, Wis.; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1904; aged 62; died, September 20, of arteriosclerosis.

**Benjamin Franklin Gay**, Hildreth, Neb.; University of Nebraska College of Medicine, Lincoln, 1886; aged 72; died, September 3, of cerebral hemorrhage.

**Murdoch M. Kerr**, Detroit; Detroit College of Medicine, 1899; served during the World War; aged 64; died, September 12, of carcinoma of the pancreas.

**Charles Gordon Gibson** Ⓢ Sioux City, Iowa; Rush Medical College, Chicago, 1900; aged 68; died, September 26, of chronic myocarditis and coronary occlusion.

**Peter Livingston Carter**, Buffalo; Pulte Medical College, Cincinnati, 1886; aged 79; died, September 13, of carcinoma of the stomach and secondary anemia.

**Bert Suter Heintzelman** Ⓢ Bayonne, N. J.; Western Pennsylvania Medical College, Pittsburgh, 1897; aged 60; died, September 24, of coronary thrombosis.

**Thomas Mulligan**, New Britain, Conn. (licensed in Connecticut in 1893); Civil War veteran; aged 95; died, September 21, of cardiorenal vascular disease.

**Leo Robert Roth**, Chicago; Illinois Medical College, Chicago, 1903; aged 56; died, September 22, in St. Anne's Hospital, of self-inflicted scalpel wounds.

**Garry O. Leighner**, Cincinnati; Eclectic Medical Institute, Cincinnati, 1903; aged 63; died, September 3, in the Bethesda Hospital, of coronary embolism.

**Margaret Helen Bigby** Ⓢ Whittier, Calif.; University of Michigan Medical School, Ann Arbor, 1917; aged 49; died, September 26, of pneumonia.

**Emanuel Kauffman**, Hardy, Neb.; Jefferson Medical College of Philadelphia, 1889; aged 76; died, September 2, of heart disease and arteriosclerosis.

**John F. Good** Ⓢ New Cumberland, Pa.; College of Physicians and Surgeons, Baltimore, 1886; aged 79; died, September 19, of cerebral hemorrhage.

**William R. Callihan**, Prestonsburg, Ky.; Eclectic Medical Institute, Cincinnati, 1903; aged 60; died, September 25, of a self-inflicted bullet wound.

**Ludwig Lang**, New York; University of the City of New York Medical Department, 1890; aged 73; died, September 4, of carcinoma of the stomach.

**Albert John Kraft**, Webster Groves, Mo.; Barnes Medical College, St. Louis, 1901; aged 62; died, September 24, of cerebral hemorrhage.

**Amos Ogden Taylor**, Altoona, Pa.; Hahnemann Medical College of Philadelphia, 1883; aged 84; died, September 27, of arteriosclerosis.

**Thomas J. Herr**, New York; Eclectic Medical College of the City of New York, 1882; aged 78; died, September 1, of heart disease.

**Allen Ray Hickman**, Manhattan Beach, Calif.; Rush Medical College, Chicago, 1894; aged 70; died, September 21, of gastric ulcer.

**Peter M. Fischer**, Shakopee, Minn.; Detroit College of Medicine, 1907; aged 56; died, September 29, of coronary thrombosis.

**James H. Smith**, Franklin, Ind. (licensed in Indiana in 1901); aged 87; was killed, September 25, in an automobile accident.

**Boris Socoloff**, Chicago; Loyola University School of Medicine, Chicago, 1919; aged 50; died, September 14, of heart disease.

**George S. Calloway**, Wallins Creek, Ky. (licensed in Kentucky in 1920); aged 68; died, September 28, of diabetes mellitus.

**Harvey Preston Gillespie** Ⓢ Woodsfield, Ohio; Starling Medical College, Columbus, 1907; aged 68; died, September 23.

**Antoine E. Cote**, Falher, Alta., Canada; School of Medicine and Surgery of Montreal, Que., 1899; died, September 1.

**Isaac Nathan Johnson**, Martin, Tenn. (licensed in Tennessee in 1903); aged 77; died, September 2, of heart disease.

**William Edgar Hover**, Sarasota, Fla.; Medical School of Maine, Portland, 1888; aged 79; died, September 27.

**J. Beal Powers**, Macon, Ga.; Atlanta Medical College, 1884; aged 74; died, September 16, of arteriosclerosis.

## Bureau of Investigation

### THE MCGLOSSON COMPANY

#### A "Sinus Cure" Mail-Order Fraud Debarred from the United States Mails

The McGlasson Company, of Detroit, was the trade name used by Rex R. Rader, F. W. Dennis and Ellen McGlasson Dennis, his wife, in the sale through the United States mails of an alleged "complete treatment" for sinus trouble. The company also operated an agency known as the Illinois McGlasson Company, of Chicago.

No physicians, chemists or pharmacists were connected with the McGlasson enterprises. One of the advertisements used by the McGlasson Company of Detroit read:

#### "SINUS

OR CATARRH can be curbed. As a trained nurse for years I saw my remedy give lasting relief to those who had tried every known method. It comes in 2 parts with complete food chart and attacks the cause. GUARANTEED—Write Ellen McGlasson, D. 13, The MCGLOSSON CO., 305 W. Fort St., Detroit, Mich."

Circulars were sent to prospective customers in which an individual, presumably Ellen McGlasson, claimed to have been "supervisor of the nose and throat department." Just where this "nose and throat department" was located was not explained. Possibly it was located at the Chicago tailor shop where the Illinois McGlasson Company received its mail.

"Supervisor" McGlasson claimed, while observing "thousands treated for sinus," to have obtained from one of the physicians "his own special formula." With this "special formula" the McGlasson Company felt equipped to rid the world of sinus infection.

The treatment furnished persons making the required remittance consisted of a three-ounce bottle of white powder labeled "Part A," a two-ounce bottle of liquid labeled "Part B," and an atomizer for spraying the latter. "Part A" consisted of a laxative powder referred to in the advertising as the "toxic poison eliminator," and "Part B" was the secret formula of an unnamed nose and throat specialist. In addition, the company threw in some "valuable suggestions regarding diet."

According to the statement made by Mr. Rader to the Post Office authorities, the "toxic poison eliminator" consisted of Rochelle salt, 1 per cent phenolphthalein, and drops of oil of cinnamon. This "wonderful regulator" was described by the exploiter as an assistant "in mildly discharging the surplus toxins from the blood stream, which is the real cause of sinus trouble." The "special formula," according to the same report, was composed of boric acid, thymol, eucalyptol, methyl salicylate, oil of thyme, sodium salicylate, alcohol and water.

The McGlasson treatment was practically identical with the Clara Ross "sinus cure" fraud reported by the Bureau of Investigation in THE JOURNAL Dec. 15, 1934, page 1873. The Clara Ross "Toxic Poison Eliminator" consisted principally of Rochelle salt, with a small quantity of phenolphthalein and oil of cinnamon, and the ingredients of the Clara Ross "Nostril Cleanser" for sinus trouble were essentially the same as the McGlasson formula. While Rader denied to Post Office inspectors any connection with the Clara Ross enterprise, operated by one Clark Ross, husband of Miss Rader, against which concern the Postmaster General issued a fraud order on Oct. 30, 1934, evidence showed that he had been engaged since 1933 under the name "Clara Ross Remedies," operating from Windsor, Ontario, in the sale of a so-called "Clara Ross Formula" for sinus trouble, the ingredients of this "Formula" being the same as those found both in the treatment sold by the fraudulent Clara Ross Company of St. Louis and in the preparations now sold by the McGlasson concerns. Changing names and addresses is an old dodge of the mail-order "medicine man" to stay in business after the use of the mails has been denied by the postal authorities.

Sinus infection, like most chronic conditions, is subject to spontaneous disappearance for varying periods of time even without medication. Those engaged in exploiting human suffering are shrewd enough to know this, and offer treatments, remedies and cures for those conditions known to have cyclic periods of quiescence.

Although the McGlasson Company submitted to the Post Office inspectors numerous testimonials endorsing the "sinus remedy," the officers were apparently not impressed and recommended at the conclusion of the hearing that a fraud order be issued against the concerns and parties involved. A 50 per cent interest in the business is owned by Mr. Rader, 25 per cent by Mr. Dennis and 25 per cent by Ellen McGlasson Dennis. Mr. Paul N. Paulsen, who operated the Chicago agency, apparently held no stock.

The Postmaster General on Oct. 13, 1936, closed the United States mails to the concerns and parties involved.

## Correspondence

### STYLE IN MEDICAL WRITING

To the Editor:—The communication of Dr. Fayette E. Reed in THE JOURNAL of October 31 in criticism of style in medical writing appealed to me. I must, however, make one reservation; that is the last paragraph. I read the article with glowing approval, and then came up against the ending that "if this strikes a responsive chord in your anatomy it is a sure sign that you are over 45 years of age." I feel some resentment—as if something were put over on me; it was not quite fair to get a man to commit himself and then use it against him.

All the same I would like to support his gentle criticisms. I sympathize with him in his feeling about words which suddenly become fashionable, like "meticulous" and "evaluate," and phrases such as "per se" and "sine qua non," and then are used so much that they become almost immediately shop worn. I am now fortifying myself against the probable common appearance of the word "nisi," as a result of the way it has recently been called to the universal attention of the public, including physicians, in reports of a famous divorce case. But this use of shop worn words is a minor defect of style.

A far greater defect is the displacing of good old sound words by new words of etymological doubtfulness—if not wholly without etymological standing—because they become fashionable. Good illustrations of these are "intriguing" for interesting and "healthful" for healthy.

I can find no justification, except ignorant usage, for intriguing in the sense of interesting. From the standpoint of etymology and usage until recent years, to intrigue has had the meaning to scheme or plot, with the implication that it is none too honorable. I can remember the day when an able-bodied man would knock you down if you said he was intriguing. Now he is likely to burst a button in pride if an attractive woman calls him that. In my post-45 mind it still has a suggestion of possibilities of the penitentiary; but I would not even mind that if I could get beyond the feeling that the new usage has a suggestion of pedantic ignorance.

Another usage that disturbs my serenity in a different way is that of healthful for healthy. Apparently nobody uses healthy in print nowadays, and those who want to appear elegant avoid it in conversation, except when they are caught off their guard and talk naturally. To say healthy now is like blurting out the word legs was in this country forty years ago. As Thackeray said, they do not have legs even on pianos in America. Healthy is a good Anglo-Saxon word. Healthful, if you think about it, suggests being full of health, like full of prunes. You would think the elegant would avoid it.

I see that the word healthy is derived from that Anglo-Saxon word *Haelp*, Middle-English *Helthe*. Healthy, therefore, is a pure English word going back to Anglo-Saxon, consisting of the old root and the terminal "y," which is equally an old English form common in such words as wealthy and stealthy. Such words are strong, pure English words. There are not any better in the language.

In order to take a fall out of a word of my friends the psychiatrists that has always seemed to me to be criticizable, and at the same time to show my freedom from partisanship, I will first attack a dermatologic word in the use of which our English colleagues have especially been offenders, and that is the use of the word "dermia" as an ending. The word is derma. That's what the Greeks from whom we got it used, and the only excuse for dermia that I can see is for euphony, as Mark Twain said in explaining the derivation of equine from horse.

My psychiatric antipathy is "manic" as used in the name manic depressive insanity. If it is derived from anything it is mania, with an "a" after the "i." There is no way of getting rid of that "a" without committing mayhem. How they have elided the "a" is more than I can see. It sounds to me like an Ethiopianism, first perpetrated by some one who was not too careful in scholarship and then taken up by others for euphony again. Maybe I am wrong in this; if so and some scholarly psychiatrist will make it clear that I am, I will at least feel that this note has had some use.

The moral of all this, of course, is that the dictionary is useful if one desires to speak or write good English. As Huneker says in his "Style and Rhythm in English Prose," "A good style is direct, plain and simple. The writer's keyboard is that humble camel, the dictionary." In other words, a knowledge of the meaning of words is the first essential of a good style, and that involves the incessant use of the dictionary. And while I am at it I would like to emphasize his other dictum "A good style is direct, plain and simple." Get over the notion that you are indicating culture by cultivating a Latinized style. As Quiller-Couch says in his book "On The Art of Writing," "Don't say 'He was conveyed to his place of residence in an intoxicated condition,' say 'He was carried home drunk.'" That sort of style is easier for most of us to understand.

The whole sermon was implied in a sentence of Dr. Fishbein's recently, when he said, referring to Auenbrugger, "He wrote the most scientific sentence I believe that has ever been written: 'A chest when thumped sounds.'"

WILLIAM ALLEN PUSEY, M.D., Chicago.

#### MORTALITY FROM APPENDICITIS

To the Editor:—I was greatly pleased that in your editorial in *THE JOURNAL* June 20 you were kind enough to make reference to my mortality in the handling of the late suppurative appendicitis cases. This reference, however, is misleading in that it fails to make clear the fundamental principle for which contention was made. In season and out of season, for over thirty years, I have been insisting by both precept and example that the secret of the mortality in appendicitis lies in the application of the principle of deferred operation to the late cases of suppurative appendiceal peritonitis: not the early perforations but the cases seen for the first time on the third, fourth or fifth day of the acute spreading peritonitis. This, of course, is simply a faithful carrying out of the principles that Ochsner enunciated and insisted on.

At the annual session of the American Medical Association in Cleveland, Dr. Coller of Ann Arbor, Mich., read a paper on the same subject. I went to Cleveland to discuss the paper and the discussion will be found in *THE JOURNAL* Dec. 8, 1934, page 1759. Dr. Coller's prime contention was that after hearing my paper read before the American Surgical Association in August 1926 he had instituted the same measures at the University of Michigan, with the result that in this particular group of late suppurative peritonitis cases the mortality had been reduced from 40 per cent to about 10 per cent.

I have been contending for this principle of deferred operation in this group of cases for more than thirty years, before

the surgical section of the American Medical Association in 1909, before the American Surgical Association in 1926 and at the Cleveland session. My experience has been a continuous, consecutive, unselected one that has been maintained for a period of more than thirty years and I am convinced that such an experience has passed from the realm of speculation into the realm of scientifically demonstrated truth.

The accompanying table, which brings the matter up to date, is self explanatory.

#### Result of Operation

	No. of Cases	No. of Deaths	Mortality
1. Recurrent appendicitis .....	1,572	0	0
2. Acute appendicitis .....	989	1	0.10%
3. Acute, gangrenous, ruptured appendix, localized abscess.....	545	3	0.55%
4. Acute, gangrenous, ruptured appendix, with diffuse peritonitis: immediate operation .....	94	10	10.64%
5. Acute, gangrenous, ruptured appendix, with diffuse peritonitis: deferred operation .....	139	2	1.43%
6. Patients moribund; drainage; appendix not removed.....	12	3	25.00%
7. Appendix removed in course of other operations .....	444	0	0
Totals .....	3,795	19	00.50%

The principle for which I am contending is included in groups 4 and 5. In group 4 there were ninety-seven cases of acute, gangrenous, ruptured appendixes, with diffuse peritonitis, seen by me for the first time during the third, fourth or fifth day of the attack, with immediate operation. In this group there were ninety-four cases with ten deaths, or a mortality of 10.64 per cent. Over against group 4, in group 5 there were 139 cases of acute, gangrenous, ruptured appendixes, with diffuse peritonitis, seen by me for the first time on the third, fourth or fifth day of the attack, with deferred operation, Ochsner plan, with two deaths, or a mortality of 1.43 per cent.

LE GRAND GUERRY, M.D., Columbia, S. C.

#### WATER FILTRATION VERSUS CHLORINATION

To the Editor:—The editorial in *THE JOURNAL*, October 31, on water filtration versus chlorination fails to take cognizance of certain practical questions. The blunt assertion is made that, "if a bacteriologically safe drinking water is desired, it may be obtained by chlorination." Actually this statement might be approximately true if one were to put in a hundred or a thousand times as much chlorine as could be absorbed by the organic matter during periods of low pollution. This would be necessary, because the degree of pollution of large sources changes suddenly and enormously, as the reports of the Chicago Board of Health show. No one would drink really safe chlorinated water. In practice it is impossible to make large water supplies safe by chlorination alone.

The editorial does not consider the fact that filtration does not supplant chlorination but only supplements it. The initial chlorination can be carried on efficiently and completely, because excessive amounts can be removed before the water is filtered. Chlorination alone might be adequate protection, except against amebas and other organisms not injured by practicable quantities of chlorine, if a storage system were available. But storage tanks for holding water for an hour or two would cost almost as much as filters. Then why not have the additional protection and the superior quality of water that filtration will provide?

Of course, no mechanical device is proof against human error in its control, but at least filtration of the water supply provides an additional tool for the protection of the public health.

M. B. VISSCHER, M.D.

A. J. CARLSON, Ph.D.

A. C. IVY, M.D., Chicago.

## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

### HORMONE TREATMENT FOR HERMAPHRODITISM— VIRILISM—HYPOGENITALISM—UNDESCENDED TESTIS

To the Editor:—I have a group of cases in which I find it difficult to decide whether some form of hormone treatment is desirable, and I come to you for advice: 1. In cases of female pseudohermaphroditism, presenting large penoclitosis, a vagina opening into the urethra, ovaries infantile and sometimes cystic, marked adrenal cortical hyperplasia, what treatment should be instituted? 2. In cases of virilism in females after puberty, when cystic ovaries are found and are surgically treated but not completely removed, what treatment should be used? 3. In hypogenitalism in males, generally associated with feminine secondary sex character, beardless face, mammary hyperplasia, penis very small, testicles generally small, prostates undeveloped, what treatment should be used? 4. In undescended testes, what is the best preparation to use in order to hasten the descent? Any assistance you may give me in these perplexing problems will be greatly appreciated.

HUGH H. YOUNG, M.D., Baltimore.

ANSWER.—1. Patients of the first type mentioned constitute one of the most pathetic groups seen by physicians. Their disorder is due to a developmental anomaly which is so fundamental as to make man's weak efforts to correct it seem quite futile. Many require expert surgical restoration, which seldom is complete and often is unsatisfactory. Medical treatment with various glandular extracts has not been promising. The suggestion is made that such cases should be admitted to institutions equipped to study the content of estrogens and androgens in blood and urine. If after a careful physical examination and such studies have been completed the patient is found to be predominantly male or female, appropriate surgical help should be given followed by a careful trial of treatment with pituitary or sex-gland hormones. It should be added that it is doubtful whether even this program would help many of these unfortunate, but it would afford the opportunity for some badly needed study.

2. Patients of the second group are more frequently seen. Some present such clear-cut syndromes as to enable the physician to make a diagnosis of (a) pituitary basophilism (Cushing's syndrome), (b) tumors or hyperplasia of the adrenal cortex, or (c) arrhenoblastoma of the ovaries. In the cases mentioned it is assumed that the last possibility has been eliminated. If in addition to the "virilism" mentioned in the question the patient has amenorrhea, purplish striae of the skin, osteoporosis of the bones, hirsutism, plethoric appearance of the face, atypical fat deposition, hypertension, elevated basal metabolic rate, glycosuria and the other symptoms described by Cushing and others, then one of the first two possibilities must be considered. If, on the other hand, the author means by "virilism" the less definite but quite distressing symptoms of hirsutism and menstrual irregularity, then we know of no diagnosis and no treatment. Such patients may represent a physiologic variant rather than a pathologic abnormality.

3. "Male hypogenitalism" as referred to is also a most indefinite condition. For many years this unfortunate group has received every available glandular product administered by mouth or by needle. At present any patient who will hold still long enough is being "shot" with something. No convincing report of success has been published. The treatment to date has been enthusiastic but ineffectual.

4. The answer to the last question regarding "the best preparation to use in order to hasten the descent of the testes" must be evasive until such time as the Council on Pharmacy and Chemistry of the American Medical Association reviews and evaluates such products. In general it may be said that the substances most frequently used are preparations of the gonadotropic principle obtained from the urine of pregnant women, the placenta or the serum of pregnant mares. Many overly enthusiastic reports of the efficacy of such treatment have appeared. At last, some conservative reports are putting in an appearance. An observer recently reported good results in 20 per cent of the cases studied. If the author of the question wishes to try such preparations he should use the products of an established pharmaceutical or biological laboratory and avoid the questionable products of unscientific commercial institutions.

It is appreciated that the answers to the questions are not definite. In defense, it may be stated that neither are the conditions inquired about definite. Treatment can never be definite for an indefinite condition. Physicians must acknowledge the inadequacy of their knowledge about such conditions and attempt to obtain this knowledge from careful study rather than from careless treatment.

### GIANT URTICARIA FROM COLD

To the Editor:—A woman, aged 25, for the first time last winter developed giant urticaria when exposed to cold weather. The eruption occurred several times and lasted about two hours each time. Also, there occurs a transitory swelling of the lips whenever she eats ice cream or ices. Holding a small piece of ice in her hands brought about a brief swelling of the fingers. She has never had any previous allergic manifestation. The family history reveals a suggestive asthmatic condition in her father; a sister occasionally "breaks out into hives." Will you kindly offer suggestions as to treatment? I would also appreciate any references in the literature to similar conditions. Kindly omit name.

M.D., New York.

ANSWER.—The symptoms in this case apparently come from exposure to cold, and contact with the ice caused some swelling of the fingers. These facts suggest that the urticaria is due to hypersensitivity to cold; in other words, that this is a case of physical allergy due to cold.

In 1923 Duke reported urticaria due to light and followed it up with numerous articles on allergic conditions caused by various physical factors, such as light, heat, cold and pressure. A number of other men have contributed articles on the subject. In a recent article Swineford discusses physical allergy at length and many references are given.

There would seem to be little doubt that there is such a thing as an allergic reaction caused, or at least initiated by, such physical factors as cold, heat, light and pressure. Many workers in the field, however, contend that these factors are not the prime causes of trouble but are associated with other sensitivity, such as foods, epidermals or pollens, and that the physical factors only act as contributory causes.

It would be well to read the articles of Duke and the others mentioned, in which suggestions as to the treatment are well brought out:

Duke, W. W.: Urticaria Caused by Light, *THE JOURNAL*, June 23, 1923, p. 1835.

Urticaria Caused Specifically by the Action of Physical Agents, *ibid.*, July 5, 1924, p. 3.

Physical Allergy: Preliminary Report, *ibid.*, March 7, 1925, p. 736.

Asthma, Hay Fever, Urticaria and Allied Manifestations of Allergy, St. Louis, C. V. Mosby Company, 1925.

Physical Allergy as Cause of Dermatoses, *Arch. Dermat. & Syph.* 13: 176 (Feb.) 1926.

Heat and Effort Sensitiveness, Cold Sensitiveness, *Arch. Int. Med.* 45: 206 (Feb.) 1930.

Clinical Manifestations of Heat and Effort Sensitiveness and Cold Sensitiveness, *J. Allergy* 3: 257 (March) 1932.

Treatment of Physical Allergy, *ibid.* 3: 408 (May) 1932.

The Dawn of a New Specialty in Medicine, *Illinois M. J.* 64: 174 (Aug.) 1933.

Bray, G. W.: A Case of Physical Allergy: A Localized and Generalized Allergic Type of Reaction to Cold, *J. Allergy* 3: 367 (May) 1932.

Alexander, H. L.: Physical Allergy: Report of a Case with Successful Treatment, *J. Allergy* 2: 164 (March) 1931.

Horton, B. T., and Brown, G. E.: Histamine-like Reactions in Allergy Due to Cold: Report of Six Cases, *Am. J. M. Sc.* 175: 191 (Aug.) 1929.

Swineford, Oscar, Jr.: Physical Allergy: Its Role as Manifested in the Routine Study of 325 Consecutive Allergic Cases, *J. Allergy* 6: 175 (Jan.) 1935.

### IONIZATION TREATMENT IN HAY FEVER

To the Editor:—There is a doctor located here who believes that the ideal treatment for hay fever is "ionization." This consists of some type of nasal treatment which he accomplishes at two sittings. He believes that he produces a goodly number of cures by this method. In view of the fact that he has some following in this community, I should like to know what the treatments consist of, and your opinion.

M.D., Illinois.

ANSWER.—While nasal ionization has come to the fore during the past few years as a suitable treatment for hay fever and allergic rhinitis, its status is still unsettled. Ionization has been employed for more than a decade by certain rhinologists (Hollender, A. R., and Cottle, M. H.: Recent Advances in the Treatment of Nasal Accessory Sinus Diseases, *Eye, Ear, Nose & Throat Monthly* 5: 575, 1926) chiefly as a therapeutic aid in simple chronic rhinitis. Its use in nasal allergy is more recent, but sufficient experience has been had with the method to draw some conclusions. Earlier workers have adhered to the employment of a weak (2 per cent) zinc sulfate solution as the electrolyte. H. L. Warwick (Treatment of Hay Fever and Its Allied Conditions by Ionization, *Laryngoscope* 44: 173 [March])

1934), A. M. Alden (A Year's Work with Ionization in the Treatment of Hay Fever, *ibid.* 44:741 [Sept.] 1934) and others prefer an electrolyte of three metallic chemicals, zinc, cadmium and tin. It is doubtful whether the latter has any advantage for the electrolytic purpose.

Experiences of Warwick, Alden and several other rhinologists have been reported as favorable in the treatment of nasal allergy whether of a seasonal or a perennial character. On the other hand, the reports of a different group are encouraging for the perennial types of nasal allergy and discouraging for the seasonal condition. There seems to be little doubt concerning the value of zinc ionization as a palliative in nonseasonal allergic rhinitis, but its curative worth remains to be more thoroughly established. The reports of L. B. Bernheimer (Zinc Ionization in Nasal Allergy, *THE JOURNAL*, June 6, 1936, p. 1980), M. A. Ramirez (Disappointing Results from the Ionization Treatment of Hay Fever, *ibid.*, Jan. 25, 1936, p. 281), A. R. Hollender and Meyer Gorin (Influence of Ionization on Vasomotor Rhinitis, *Illinois M. J.* 69:493 [Dec.] 1935) and others convey this impression.

It should be added further that while from a clinical standpoint no harmful effects from nasal ionization have been observed, the possibilities of local tissue injury, at least for a brief period, must be entertained. L. W. Dean (The Fundamentals of Allergic Rhinitis, with Particular Reference to Ionization, *Ann. Otol., Rhin. & Laryng.* 45:236 [June] 1936) believes that this period is about two years.

In summarizing it can be said that:

1. Zinc ionization is a nonspecific local procedure suitable for nonseasonal types of allergic rhinitis, especially after immunization and other methods have failed to bring about a relief of symptoms.

2. It should not be heralded as a cure in spite of permanent relief of symptoms in some cases.

3. The procedure merits application only after a careful, comprehensive study of each individual case to establish a rational indication.

#### STERILIZATION AND EPILEPSY

To the Editor:—Will you kindly let me know what results, if any, have been reported in cases of epilepsy apparently associated with the menstrual or ovulation phases by sterilization or by x-ray sterilization. The case I have in mind is that of a girl, aged 20, white and single. Her epileptic seizures began apparently with the onset of menstruation, nine years ago. At onset, these seizures appeared once in two years then occurred once a year. Of late these seizures have been appearing at an average rate of once a month about the menstrual and ovulation periods. Her physical examination is negative in all respects, the only significant factor being that there is present a distinct allergic condition. As an infant she had eczema and from time to time has had attacks of urticaria. For the past nine months following a spinal puncture these attacks have become more frequent. This case has been seen in consultation with a prominent neurologist in New York City and after close observation for six months, during which treatment was given on an endocrine basis, he advises temporary sterilization by x-ray. I would like to have your opinion as to the efficacy of such treatment and also any bibliography you may have on the subject. Also, if you have one, a list of articles you may refer me to. Kindly do not publish name.

M.D., New York.

ANSWER.—The idea of an association between epileptic seizures and menstruation is an old one. The Germans have even classified what they called "ovariellen epilepsie." The only relationship that can be established, however, is the fact that there is an increased irritability at the time of menstruation. Direct relationship between the endocrine glands and epilepsy is seldom, if ever, demonstrated. F. Winter (*München. med. Wchschr.* 70:1172 [Sept. 14] 1923) reported that he had stopped seizures for three and one-half months after x-ray exposure of the ovaries. Such results are reported, and apparently occur, after almost any treatment that influences the metabolism to any great extent. The two most recent references on the influence of endocrine organs on the genesis of epilepsy are by F. Braun (*Schweiz. Arch. f. Neurol. et de Psychiat.* 36:63, 1935) and J. J. H. M. Klessens (*Nederl. tijdschr. v. geneesk.* 80:1119 [March 14] 1936).

It is extremely doubtful that the patient in question would derive any particular benefit from x-ray treatment. If the purpose is to sterilize her, this can be done in a much better way and without destroying the organs. The patient would probably respond much better to dietetic control, such as the ketogenic diet, fluid restriction and so forth, and to phenobarbital.

There has never been any definite relationship demonstrated between epilepsy and allergy. An epileptic patient may be allergic, but there is no definite sequel.

#### IMMUNIZATION AGAINST WHOOPING COUGH

To the Editor:—A boy, aged 10 years, is well nourished and normal in all respects except for a marked sensitivity to numerous foods, plants and animal matter since babyhood. The skin tests were performed at Ann Arbor and were complete. Would immunization for whooping cough cause a reaction? At this age is such immunization necessary?

DWIGHT F. SCOTT, M.D., Sault Ste. Marie, Mich.

ANSWER.—No data are available on prophylactic whooping cough vaccination of older children. Most children of 10 have already had the disease. The best age for the injection of B. pertussis vaccine (immunizing) is the second half year of life. As the allergic child usually is predisposed to contract the more severe and protracted form of pertussis, with subsequent attacks of bronchitis and asthma as a sequel, it seems advisable to attempt immunization. Vaccine authorized by Northwestern University Medical School would not be as liable to cause severe anaphylactic or other untoward reactions as other preparations, since it contains no trace of animal protein. It is prepared from bacilli grown on human blood. The patient will probably require a total dosage of 10 or 12 cc. It may be divided into four weekly injections as follows: 1 cc. hypodermically (just under the skin); if no marked reaction occurs, 3 cc. should be given a week later; a week thereafter, from 3 to 4 cc. should be injected, and a final 3 to 4 cc. should be given a week later. A transient local erythema at the site of injection seems to be desirable; it usually disappears within a few days. Injections should not be given into the site of previous injections or into vaccination scars. The syringe and needles should be sterilized by heat; fingers should not touch the sterile plunger when vaccine is withdrawn and injected; the vial cap and the site of injection are sterilized by briskly rubbing with an alcohol sponge. Heat or wet dressings should not be applied to a local reaction, as such measures induce abscess formation.

#### NARCOLEPSY

To the Editor:—I wish to inquire about the probable etiologic factors and the type of treatment in a man, aged 26, afflicted with narcolepsy. The family history and past history are irrelevant. It seems that about four years ago he began to have attacks of flaccidity of the entire body occasionally during periods of excitement, such as getting a fish on a line and starting to draw it in. To start off with an exciting conversation, he would be unable to say anything. Seeing an exciting motion picture would cause him suddenly to become limp or have his knees crossed and for a time being unable to uncross them. These attacks last several seconds. There is no loss of consciousness. Concomitant with the onset of this phase of his illness he has periods in which he will be writing or aggregated with other people talking in which he will fall asleep. He occasionally goes to sleep while driving his car, which has caused a number of automobile accidents. He is of the obese hypopituitary type, is 5 feet 9 inches (175 cm.) tall and weighs 235 pounds (107 Kg.). Examination of the different systems gives negative results. Laboratory tests are negative, including Wassermann tests of the blood and spinal fluid. X-ray examination of the sella turcica shows diminished size, without evidence of tumor. His basal metabolic rate is -10. His eyes are normal except that he can discern light and dark only in his left eye. Please omit name.

M.D., Texas.

ANSWER.—The description given is characteristic of the narcolepsy of Géléneau, including attacks of cataplexy as well as of sleep. Little is known of the etiology in many cases, though some appear to be a sequela of epidemic encephalitis. Therapy in these cases is often unsatisfactory. Relief has been obtained through the administration of ephedrine and more recently of benzedrine sulfate. The latter is usually administered in doses of from 10 to 20 mg. on arising in the morning and if necessary an additional 10 mg. at about 11 a. m.; the drug should not be given after noon, as it is liable to interfere with sleep at night.

#### DIABETES AND CORONARY THROMBOSIS

To the Editor:—I have a patient aged 52 who has diabetes and is convalescing from an attack of coronary thrombosis. Does a high fat diabetic diet predispose such a patient to thrombosis, and should the patient be kept underweight? If so, approximately how much? Please omit name.

M.D., Ohio.

ANSWER.—The question as to whether an excess of fat in the diet leads to arteriosclerosis has been much discussed. The imbibition theory of arteriosclerosis fits the diabetic situation. This theory suggests that the fat in the form of cholesterol esters is deposited in the intima of the larger arteries, that the more fat in the blood the more readily it might be deposited. Later on calcium salts may be linked with the cholesterol in the lower layers of the intima and calcified arteries result. Aschoff, of course, has amplified this theory. Joslin believes that one of the important causes of premature development of arteriosclerosis in diabetes, apart from the influence of advanc-

ing age, is the excess of fat in the diet and in the blood, and obesity. Other men have not felt that a high fat diet predisposes to arteriosclerosis. One must recognize the work of recent years, from a prognostic point of view, in studying the level of cholesterol of the blood in diabetes.

To the question regarding the patient at hand, the patient should be reduced to about 10 per cent below normal both because of the heart and the diabetes. It is impossible to say that a high fat diet predisposes the patient to thrombosis, but such a patient should not be placed on a high fat diet.

#### INTERCOURSE DURING POSTGONORRHEAL PROSTATITIS

To the Editor:—In some instances of postgonorrheal prostatitis, pus can be expressed from the prostate by massage for months or even years after the acute stage. For how long a period must one interdict sexual intercourse in such a case? Please omit name. M.D., New York.

ANSWER.—As long as the strippings from the prostate and vesicles show pus, it is well to continue massage until they are free from pus. Whether or not sexual intercourse is permitted in this kind of a case depends entirely on the bacteriology of the fluid. If recent examinations for gonococci are negative and the smears and cultures are negative, there is no reason why the patient may not indulge. The fact that the patient has pus does not prevent sexual intercourse. When one gives permission, one must be sure that there are no organisms in the strippings.

#### BRACHIAL PLEXUS INJURY

To the Editor:—Two days ago I was called to see a patient who had injured his right shoulder twelve hours previously. Examination revealed a subglenoid dislocation of the right humerus, the right hand was moderately cyanotic and colder than the left, and the radial pulse was weaker on the right side. He complained of a numb feeling, and there was a total loss of mobility of his fingers, wrist and elbow. X-ray examination was negative for fracture. Reduction was effected without difficulty under ether anesthesia. Follow up roentgenograms were negative. A sling was substituted for the Velpeau bandage to allow exercise of the fingers, wrist and elbow. After two days the only motion he has on the right side is slight flexion of his fingers and wrist. Extension, rotation and motion at the elbow are nil. Sensation of touch and of pain are present. What is the prognosis? What physical therapy should be employed? Please omit name. M.D., Wisconsin.

ANSWER.—It is difficult to advise regarding the prognosis and therapy here because injury to adjacent nerves is a possibility. The symptoms described fit in rather well with the upper arm type of brachial plexus palsy; the prognosis of this condition varies so that no general rule can be laid down, but it is generally quite good, although sometimes surgical treatment becomes necessary. Massage, passive and active exercises (when they become possible) may be recommended; also judicious use of faradic and galvanic currents, depending on which current the muscles still react to. In the meantime the possibility of brachial plexus injury should be considered. If this is thought to be present, after a reasonable length of time, if no improvement occurs, surgical intervention may be necessary.

#### NEURITIS OR MYELITIS AFTER TETANUS ANTITOXIN

To the Editor:—I am writing to you asking for information and statistics on the occurrence of toxic neuritis or myelitis following the injection of tetanus antitoxin. About two months ago a college student was given 1,500 units of Mulford's serum subcutaneously in the soft tissue of the back between the scapulae. On the second day he had a mild reaction, which quickly disappeared. This was followed on the fifth day by the usual systemic reaction of fever, chills, malaise and urticaria. The following day he noticed pain in the right deltoid associated with difficulty in raising the arm at the shoulder, and on the seventh day the shoulder was completely paralyzed. The condition is still present. The arm has been placed in an airplane splint. Just how frequent an occurrence is this? What is the prognosis? Would exercise at the time of the systemic reaction have anything to do with this occurrence? Please omit name. M.D., California.

ANSWER.—Toxic neuritis or myelitis following the injection of tetanus antitoxin is rare. Wilson and Hadden (THE JOURNAL, Jan 9, 1932, p. 123) describe three cases and refer to Lhermitte and Haguénau, who collected reports of seventy-seven such cases from the literature up to 1931. Diphtheria antitoxin, diphtheria toxin-antitoxin, scarlet fever antitoxin and antistreptococcus serums may produce similar complications. The upper roots of the brachial plexus, especially the fifth and sixth cervical, are most frequently involved. The muscles commonly affected are the serratus anterior, deltoid, trapezius, supraspinatus and infraspinatus, and these may be partially or

completely paralyzed. The neuritis is thought to be due to edema of the cord or nerve trunk and perineural tissue developing during the course of a serum reaction. The prognosis is good. Function is completely restored after a period of from three to eight months. Exercise at the time of the systemic reaction is unrelated to this complication.

#### BLUE COLORATION OF DRINKING WATER

To the Editor:—A local oil refining company has a small colony located near the plant. It has its own water supply. Well water is distributed by motor pump through copper pipes (Revere). The water is strongly alkaline. Bacteriologically it is normal. The water turns green on standing after being drawn. If drunk first thing in the morning without draining for from three to five minutes it produces nausea almost at once with some slight abdominal discomfort and perhaps two or three watery evacuations. There are about thirty people in this colony. It would seem that all are affected to some degree with the gastro-intestinal symptoms. About six of them also manifest a mild dermatitis, the chief symptom being itching. Copper pipe was put in two years ago. Prior to that time, ordinary steel pipe was used. At that time the water never turned green and there was no gastro-intestinal difficulty. Could the copper pipe be the cause? How could this water be tested? What is the status of copper piping in the present plumbing systems? I would appreciate any suggestion that you may make. M.D., Kentucky.

ANSWER.—From the information submitted it is probable that the blue green discoloration of the water distributed through the copper pipe is due to the action of the "strongly alkaline water" on this metal. Waters with a pH of 9.5 or higher are known to be "active" with copper. The cupric product that results would depend on the dissolved salts in the well water.

This difficulty could be overcome by treating the water to reduce its hydrogen ion content to a point at which it would not be active on copper. This could be accomplished by the use of an acid or carbon dioxide. To determine the corrective measure, a chemical analysis of the water should be made.

Returning to the use of iron or steel pipe might be advisable, but there may be other good reasons for not doing so. It would be prudent to secure advice from a competent water chemist with regard to this problem, from the standpoint both of the health of the consumers and of maintenance of the water system.

#### SIALORRHEA

To the Editor:—I have a patient suffering from paralysis agitans, the most troublesome symptom being a free flow of saliva, which causes considerable dribbling and makes the patient very uncomfortable. Could you make some suggestion as to the abatement of this condition?

C. E. SAVAGE, M.D., Delphos, Ohio.

ANSWER.—The sialorrhea described is most likely due to a disturbance in tone of those structures involved in apprehension, placement and swallowing of substances, and not to increased secretion of saliva. Consequently scopolamine or stramonium may be of some value. These substances also diminish the amount of salivary secretion. If these do not produce the desired result, atropine may be used.

#### BEHAVIOR DISTURBANCE AND ENDOCRINE DISORDER

To the Editor:—Was I scientifically correct in stating that a wilful, sullen and overactive problem child, whose facial features are deformed with large teeth widely spaced, is probably the victim of a mendelian heredity, accompanied by a pituitary or glandular disturbance? Please omit name. M.D., New York.

ANSWER.—No definite answer can be given without more information about the patient. The behavior disturbance may be due to a variety of things, such as an environmental difficulty, or to one of the various forms of encephalitis which may follow infection, trauma and the like. The habit of attributing various conditions to endocrine disturbances, unless there is specific evidence of them, is to be deprecated.

#### VISSCHER-BOWMAN TEST

To the Editor:—In THE JOURNAL, October 24, you state on page 1409 in reply to a question concerning the Visscher-Bowman test for pregnancy that "the original article describing it appeared in the *Deutsche medizinische Wochenschrift* 60: 1823 (Nov.) 1934." I wish to point out that this statement is incorrect and unfair to Drs. Visscher and Bowman. The original article of these workers appeared in the *Proceedings of the Society for Experimental Biology and Medicine* 31: 460 (Jan.) 1934, in which the results with 317 cases are reported. The article you give as the original is by J. G. Menken.

M. J. SCHULOVITZ, Baltimore.

## Medical Examinations and Licensure

### COMING EXAMINATIONS

#### STATE AND TERRITORIAL BOARDS

ALABAMA: Montgomery, June 29-July 1. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

ALASKA: Juneau, March 2. Sec., Dr. W. W. Council, Juneau.

ARIZONA: Phoenix, Jan. 5-6. Sec., Dr. J. H. Patterson, 826 Security Bldg., Phoenix.

CALIFORNIA: *Reciprocity*. Los Angeles, Dec. 16. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

COLORADO: Denver, Jan. 5. Sec., Dr. Harvey W. Snyder, 422 State Office Bldg., Denver.

CONNECTICUT: *Basic Science*. New Haven, Feb. 13. *Prerequisite to license examination*. Address State Board of Healing Arts, 1895 Yale Station, New Haven.

DELAWARE: Dover, July 13-15. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, Dover.

DISTRICT OF COLUMBIA: Washington, Jan. 11-12. Sec., Commission on Licensure, Dr. George C. Ruhland, 203 District Bldg., Washington.

IDAHO: Boise, April 6. Commissioner of Law Enforcement, Hon. Emmitt Pfost, 205 State House, Boise.

ILLINOIS: Chicago, Jan. 26-28. Superintendent of Registration, Department of Registration and Education, Mr. Homer J. Byrd, Springfield.

IOWA: *Basic Science*. Des Moines, Jan. 12. Sec., Prof. Edward A. Benbrook, Iowa State College, Ames.

KANSAS: Topeka, Dec. 8-9. Sec., Board of Medical Registration and Examination, Dr. C. H. Ewing, 609 Broadway, Larned.

MARYLAND: *Regular*. Baltimore, Dec. 8. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. *Homeopathic*. Baltimore, Dec. 8-9. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MICHIGAN: Ann Arbor and Detroit, June 9-11. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 202-3-4 Hollister Bldg., Lansing.

MINNESOTA: *Basic Science*. Minneapolis, Jan. 5-6. Sec., Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. *Medical*. Minneapolis, Jan. 19-21. Sec., Dr. Julian F. Du Bois, 350 St. Peter St., St. Paul.

MONTANA: Helena, April 6. Sec., Dr. S. A. Cooney, 7 W. 6th Ave., Helena.

NEW HAMPSHIRE: Concord, March 11-12. Sec., Board of Registration in Medicine, Dr. Charles Duncan, State House, Concord.

NEW MEXICO: Santa Fe, April 12-13. Sec., Dr. Le Grand Ward, Box 693, Santa Fe.

NEW YORK: Albany, Buffalo, New York and Syracuse, Jan. 25-28. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, 315 Education Bldg., Albany.

NORTH DAKOTA: Grand Forks, Jan. 5-8. Sec., Dr. G. M. Williamson, 4 1/2 S. 3rd St., Grand Forks.

OKLAHOMA: Oklahoma City, Dec. 9. Sec., Dr. James D. Osborn, Jr., Frederick.

OREGON: Portland, Jan. 5-7. Sec., Dr. Joseph F. Wood, 509 Selling Bldg., Portland.

PENNSYLVANIA: Philadelphia, January. Sec., Board of Medical Education and Licensure, Mr. James A. Newpher, Education Bldg., Harrisburg.

PUERTO RICO: San Juan, March 2. Sec., Dr. O. Costa Mandry, Box 536, San Juan.

RHODE ISLAND: Providence, Jan. 7-8. Chief, Division of Examiners, Mr. Robert D. Wholey, 366 State Office Bldg., Providence.

SOUTH DAKOTA: Pierre, Jan. 19-20. Dir., Division of Medical Licensure, Dr. B. A. Dyer, Pierre.

TENNESSEE: Memphis, Dec. 16-17. Sec., Dr. H. W. Qualls, 130 Madison Ave., Memphis.

VERMONT: Burlington, Feb. 10-12. Sec., Board of Medical Registration, Dr. W. Scott Nay, Underhill.

VIRGINIA: Richmond, Dec. 9-13. Sec., Dr. J. W. Preston, 28 1/2 Franklin Road, Roanoke.

WEST VIRGINIA: Charleston, March 1. Sec., Public Health Council, Dr. Arthur E. McClue, State Capitol, Charleston.

WISCONSIN: *Basic Science*. Milwaukee, Dec. 19. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee. *Medical*. Madison, Jan. 12-14. Sec., Dr. Henry J. Gramling, 2203 S. Layton Blvd., Milwaukee.

WYOMING: Cheyenne, Feb. 1. Sec., Dr. G. M. Anderson, Capitol Bldg., Cheyenne.

#### NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II*. Feb. 9-11, May 10-12, June 21-23, and Sept. 13-15. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

#### SPECIAL BOARDS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written examination for Group B applicants* will be held in various cities throughout the country, April 17. *Oral examinations for Group A and B applicants* will be given in Philadelphia, June 7-8. Sec., Dr. C. Guy Lane, 416 Marlborough St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written examination* will be held simultaneously in different centers of the United States and Canada in December. *Practical or clinical examination* will be given in St. Louis in April. Chairman, Dr. Walter L. Biering, 406 Sixth Ave., Des Moines.

AMERICAN BOARD OF OPHTHALMOLOGY: Los Angeles, Jan. 23. Sec., Dr. John Green, 3720 Washington Blvd., St. Louis, Mo.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Cleveland, Jan. 9. Sec., Dr. Fremont A. Chandler, 180 N. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Philadelphia, June 7-8. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: New York, Dec. 29-30. Sec., Dr. Walter Freeman, 1028 Connecticut Ave., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: Atlantic City, June 4-6. Sec., Dr. Byrl R. Kirklin, Mayo Clinic, Rochester.

### Connecticut July Examinations

Dr. Thomas P. Murdock, secretary, Connecticut Medical Examining Board, reports the written examination held in Hartford, July 14-15, 1936. The examination covered 9 subjects and included 70 questions. An average of 75 per cent was required to pass. Forty-two candidates were examined, 24 of whom passed and 18 failed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Yale University School of Medicine.....	(1936)		83.5*
Georgetown University School of Medicine.....	(1935)		75.3*
University of Maryland School of Medicine and College of Physicians and Surgeons.....	(1934) 79.4, (1935)		79.7
Boston University School of Medicine.....	(1934)		75
Harvard University Medical School.....	(1934) 83.5, (1935)		77.5
Tufts College Med. School (1932) 76.8, (1934) 75.5, 83, (1936) 75, 75.3			
Columbia University College of Physicians and Surgeons.....	(1935) 75, 75, (1936) 76.6, 79.7, 80.5,*		81.8*
Cornell University Medical College.....	(1935)		75*
Long Island College of "			77.6, 79.4
University of Toronto Fa			78.3
University of Glasgow Medical Faculty.....	(1935)		81.1
Osteopath†			81

School	FAILED	Year Grad.	Per Cent
George Washington University School of Medicine.....	(1935) 69.7,		70.6
Georgetown University School of Medicine (1934) 69.7, (1935)			72.7
University of Illinois College of Medicine.....	(1936)		66.3
Tufts College Medical School.....	(1934) 72.2, (1935) 68.6, 71,		71.2
Columbia University College of Physicians and Surgeons (1935)			71.2
Long Island College of Medicine.....	(1935)		66.2
Jefferson Medical College of Philadelphia.....	(1934)		70.1
University of Vermont College of Medicine.....	(1935)		71.1
Regia Università degli Studi di Roma, Facoltà di Medicina e Chirurgia.....	(1934)†		68
Regia Università di Napoli Facoltà di Medicina e Chirurgia.....	(1935)†		68.9
Osteopaths, 3†			8

Twenty-eight physicians were successful in the oral examination for endorsement applicants given in Hartford, July 28. The following schools were represented:

School	PASSED	Year Endorsement of
University of Colorado School of Medicine.....	(1933) N. B. M. Ex.	
Yale University School of Medicine.....	(1933, 2), (1934), (1935, 2), (1935)* N. B. M. Ex.	
George Washington University School of Medicine.....	(1927)* New York	
Georgetown University School of Medicine.....	(1935) N. B. M. Ex.	
University of Louisville School of Medicine.....	(1933) Kentucky	
Johns Hopkins University School of Medicine.....	(1929)* Maryland,	
(1931)* N. B. M. Ex.		
University of Maryland School of Medicine and College of Physicians and Surgeons.....	(1932) N. B. M. Ex.	
Boston University School of Medicine.....	(1933), (1934) N. B. M. Ex.	
Harvard University Medical School.....	(1924) Penna.,	
(1928)* Massachusetts, (1934) N. B. M. Ex.		
Tufts College Medical School.....	(1935) N. B. M. Ex.	
St. Louis University School of Medicine.....	(1927)* Ohio	
Syracuse University College of Medicine.....	(1933) N. B. M. Ex.	
University of Rochester School of Medicine.....	(1934) N. B. M. Ex.	
Jefferson Medical College of Philadelphia.....	(1933) New York	
University of Pennsylvania School of Medicine.....	(1933) Penna.	
Medical College of Virginia.....	(1931) Virginia	
University of Virginia Department of Medicine.....	(1919)* Virginia	
Queen's University Faculty of Medicine.....	(1921)* New York	
Ludwig-Maximilians-Universität Medizinische Fakultät, München.....	(1911)**	

\* License has not been issued.

† Examined in surgery.

‡ Verification of graduation in process.

\* Average grades not reported.

\*\* Permitted to appear for oral rather than written examination because of his many contributions to medicine.

### South Carolina June Report

Dr. J. Earle Boozer, secretary, State Board of Medical Examiners of South Carolina, reports the written examination held in Columbia, June 23-25, 1936. The examination covered 17 subjects and included 70 questions. An average of 75 per cent was required to pass. Thirty candidates were examined, all of whom passed. Eight physicians were licensed by reciprocity. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
University of Pennsylvania School of Medicine.....	(1935)		89
Medical College of the State of South Carolina.....	(1934)		84,
(1935) 83, (1936) 78, 78, 78, 79, 79, 81, 81, 82, 82, 83, 83, 84, 84, 84, 84, 85, 85, 85, 85, 85, 86, 86, 86, 88, 89			
School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Emory University School of Medicine.....	(1933), (1935, 2)		Georgia
University of Georgia Medical Department.....	(1927)		Georgia
Indiana Medical College.....	(1906)		N. Carolina
University of the South Medical Department.....	(1900)		Georgia
Medical College of Virginia.....	(1933)		Virginia
University of Virginia Department of Medicine.....	(1926)		Virginia

## Book Notices

**Food, Fitness and Figure.** By Jacob Buckstein, M.D., Consulting Physician in Diseases of the Stomach and Intestines to United States Veterans' Bureau. Introduction by Harlow Brooks, Visiting Physician Bellevue Hospital. Cloth. Price, \$2. Pp. 252. New York: Emerson Books, Inc., 1936.

This volume presents in simple, nontechnical language the essential facts of nutrition in a form suited to the needs and background of the intelligent layman. From a perusal of the text one gathers that the chief objective of the author is to develop in the minds of the general public a saner attitude toward reduction, food fads, and other practical dietary problems. Such an attitude he apparently correctly believes can be developed only through an understanding of the fundamental principles of nutrition. In any case, the presentation is in accord with this plan.

Two introductory chapters trace the development of the modern diet, the art of cooking, and food preservation. Then follows a straightforward statement, running through six chapters, of the functions in the body of each of the chief dietary constituents—energy, protein, fat, carbohydrate, minerals and the several vitamins—and in another five chapters a discussion of the most important foodstuffs and beverages, including their origin and history, and their contributions and limitations in the human dietary. With the foundation laid, the remaining half of the book is devoted to the application of the knowledge thus set forth to practical dietary problems: the requirements of a normal diet and how the various foodstuffs may be used to cover them, and analysis of common dietary fads, including vegetarianism and fasting, and a discussion of the all important problem of weight control, particularly weight reduction. The last named topic receives the major emphasis. This discussion points out the dangers of short cuts to reduction through the use of products containing phenolphthalein or thyroid and the more recently employed dinitrophenol, and also shows the limitations of the many popular reduction diets such as the Hollywood eighteen day diet. It outlines the basic principles of reduction and unlike most presentations of this subject it emphasizes the foods that must be included in the diet to insure that the needs of the body for protein, minerals and vitamins are safely covered. It then works out a practical reduction plan and concludes with menus for fourteen days to provide approximately 1,500 calories, and a table of 100 calory portions to enable the reader to make other intelligent dietary adjustments.

The description thus far might apply to any one of the numerous recent elementary textbooks written for the same purpose, but it differs from the general run of such books in several important respects. It is first of all accurate in all details, both in the scientific facts presented and in their implications and in the practical dietary directions. It is moreover consistent in tone and level throughout, never for a moment going over the heads of the lay audience for whom it is intended. It is well written, well balanced and sane, one of the few books of this type that one would be willing to put into the hands of the usual layman without editing.

**Schlacke und Vitamine: Die Schlackenkost als Behandlungsweg bei Krankheitszuständen.** Von Professor Dr. Hugo Salomon. Paper. Price, 12 marks. Pp. 263, with one illustration. Leipzig & Vienna: Franz Deuticke, 1936.

This is a monograph in German on the rôle of a specific diet composed of coarse whole grain bread and an abundance of fruits and vegetables. The purpose is to provide a great deal of roughage to promote peristalsis, to eliminate constipation, and to provide an abundance of energy, vitamins and mineral elements. It is a meatless, vegetarian and fruitarian diet which, according to the author's experience, is helpful in stomach and intestinal ulcers, fevers, typhoid, tuberculosis, heart diseases, arteriosclerosis and hypertension, joint diseases, skin diseases, pancreatic disturbances, kidney disturbances, migraine and nervous conditions, and all diseases associated with constipation. The word "schlacke" means slag, or offal. Since Dr. Salomon's diet is abundant in celluloses, he names his diet "a slag diet." What he really means, apparently, is a diet abundant in roughage. A "schlacken" diet, the author holds, can be made salt free

or very poor in salt when the vegetables are cooked without salt and when all the wheat bread is made salt free. Because of its low protein content, the author claims that it is beneficial in kidney diseases and diseases associated with hypertension. The author's clinical work with this diet in the various diseases, however, is rather limited and needs further trial before definite conclusions can be made concerning its advantages in various diseases.

**Syphilis Sive Morbus Humanus: A Rationalization of Yaws So-Called for Scientists and Laymen Interested in the Damage to Man from Venereal Diseases.** By Charles S. Butler, A.B., M.D., LL.D., Rear Admiral (MC) U. S. Navy. Cloth. Price, \$3. Pp. 137, with 19 illustrations. Lancaster, Pa.: Science Printing Co., 1936.

The author sets himself firmly to a triple task: (1) to disseminate knowledge to the general populace concerning the ravages of venereal diseases; (2) to expose the fallacy of the hypothesis of the American origin of syphilis; (3) to show the unity of the so-called yaws and syphilis. In the first he has failed, in the second he is ineffectual and in the third he has succeeded admirably. The broad minded scientist and the interested physician will find much of interest in the volume, for it is only these two who will understand it. However much one may be in sympathy with the contention of the author that syphilis did not originate in the New World, his array of historical evidence in this direction is far from convincing. The description of the venereal diseases by precolumbian physicians might apply to a half dozen diseases that could be easily confused with syphilis. Furthermore, the most authoritative of the postcolumbian writers, Francisco Lopez de Villalobos and Juan de Vigo, are not even mentioned by the author. The former wrote an authoritative treatise in 1498 entitled *Las bubas*, the latter a treatise in 1517 entitled *La mal français*. Both works antedated the poem of Fracastorius by many years. The third part of the book is on a subject with which the author is familiar and which he handles admirably. He evidently has much reason for considering yaws and syphilis the same disease. This book is of much interest to the syphilologist and those interested in tropical medicine, but to the ordinary medical man it is technical and to the layman it is confusing. The partial history of the slave trade could have been shortened and the whole subject matter better arranged. Nevertheless, the book as a whole is interesting and the author is to be commended for his zeal.

**Cystoscopy and Urography.** By Jas. B. Macalpine, F.R.C.S., Honorary Surgeon and Surgeon in Charge of the Genito-Urinary Department, Salford Royal Hospital, Manchester. Second edition. Cloth. Price, \$9. Pp. 478, with 311 illustrations. Baltimore: William Wood & Company, 1936.

This is an excellent book for the beginner in cystoscopy and for the general practitioner who does a moderate amount of cystoscopy. The cystoscope is fully described and illustrated and the advantages of the various models are clearly presented. The author wisely states that he knows nothing of the direct cystoscope and he does not consider it. Practitioners in this country will wonder that he even bothers to consider a non-irrigating cystoscope and to trouble himself to mention the advantages of the irrigating model. Sterilization of both cystoscopes and ureteral catheters by formaldehyde vapor is described, even though this has long been known to be unreliable. The historical reviews of the various procedures are excellent. The order of examination of the urologic patient is described, but nowhere in the order of examination is excretory urography considered. The various descriptions of the normal bladder, the technic of cystoscopy and the various lesions seen in the bladder are excellently described and illustrated. The volume is considerably enlarged and revised from the first edition, but there still remain many discussions which are solely of historical interest that could be omitted without materially affecting the value of the book. The significance of hematuria is well stated and should be read by all who see urologic patients. Various other points, such as the effect of uterine displacements and tumors on the bladder, purpura, neurogenic bladder, ureteral catheterization, renal function tests, pyelovenous backflow, adrenal diseases, and abnormalities, are well discussed for a volume of this size.

Operative cystoscopy is not well described and the reviewer would hesitate to advise any one to attempt manipulation of ureteral calculi, prostatic resection, or treatment of bladder

tumors from the data presented. For example, when discussing bladder tumors the author states that "the acknowledged uncertainty of the pathological opinion has led me to rely exclusively on clinical, which actually means cystoscopic, data for my diagnosis." This is certainly bad teaching. The advantageous use of the resectoscope in the treatment of bladder tumors is not mentioned. There is nearly as much discussion of pyelovenous backflow as there is of prostatic resection. When one reads the following, one sees the inadequacy of the presentation:

The sections removed are laid out on a piece of wax in the bottom of a kidney bowl. Having removed a certain number, the surgeon looks at them with a view to deciding their aggregate size. A good way is to gather them side by side between the fingers. Estimate thus the bore of the new channel, and, allowing for inward pressure from remaining parts, consider whether an adequate passage has been provided.

There is a great deal of doubt that with the present rapid advance of transurethral procedures consideration should be given them in a volume on cystoscopy. The size of the field is such that even at present a separate volume on operative cystoscopy is necessary. The term "excretion urography" is championed by the author. This is certainly better terminology than intravenous urography, which is so widely used in this country, but certainly not as grammatically correct as excretory urography, suggested by Braasch. The discussion of this and of instrumental pyelography is quite sound. A complete index is appended.

This is an excellent volume for the teaching of diagnostic urography, but poor for operative cystoscopy.

**Les maladies des fosses nasales.** Par J. Terracol, professeur à la Faculté de médecine de Montpellier. Avec la collaboration des Professeurs J. Delmas, et al. Cloth. Price, 130 francs. Pp. 554, with 223 illustrations. Paris: Masson & Cie, 1936.

This is a comprehensive work on the diseases of the nasal fossae. It was written in collaboration with Professors Delman, Margarot and Lamarque and Messrs. Debidour, DeJean, Guibert and Tarneaud. The first part deals with the general pathology of the nasal cavities, with a consideration of the function of smell and respiration as well as of the anatomy of the circulation and such topics as epistaxis. There are also chapters describing the various sensory disturbances as well as the changes in secretion of the mucous membrane. Allergy is dealt with in one of the chapters in considerable detail. The second part of the book is devoted to the special pathology. Under this heading the structural changes such as deviation of the septum and hypertrophy of various parts are described. One chapter is devoted to the involvement of the skin at the entrance of the nose, another to acute rhinitis of epidemic character, and there are chapters on the rhinitis of infants, hypertrophic rhinitis, nasal fractures, nasal tuberculosis and syphilis, as well as chapters on atrophic rhinitis, rhinoscleroma and tumors of the nasal cavities. Nasal leprosy, foreign bodies in the nose and other topics, such as roentgenography of the nose and fossae, are given considerable attention. This is a decidedly valuable treatise presented with the usual French clarity of diction and classification. It is well illustrated, informative and an excellent addition to the literature of rhinology.

**The Microscope.** By Simon Henry Gage. Sixteenth edition, with the addition of a chapter on Micro-Incineration. Cloth. Price, \$4. Pp. 617, with 313 illustrations. Ithaca, New York: Comstock Publishing Company, Inc., 1936.

This is a storehouse of information concerning the principles of the microscope and directions for using it, the methods of preparing tissues for study and the newer and more fundamental methods in microscopy. The darkfield microscope is fully treated. This edition has a new chapter on the ultraviolet microscope, which the previous editions did not have. The ultraviolet microscope is an instrument in which small objects may be submitted to the action of ultraviolet radiation and the results observed. There must be available, therefore, some abundant source of ultraviolet such as the carbon arc or the high pressure mercury arc in a quartz tube, and certain other especially designed equipment. This entire edition has been reset and the material generally revised and rearranged. The book was first published twenty-eight years ago; happily the author has lived to revise the present edition and has been assisted by his son, whom he credits largely for the new

chapter on ultraviolet microscopy. The author especially emphasizes the study of living and fresh tissues unmodified by stains, of which in the last half century there has been developed a great profusion. The study of living and fresh tissues unstained has been partly made possible by the perfection of the darkfield, the ultraviolet, and the polarizing microscope and the microspectroscope. There is a chapter on photography and one on the history of lenses and microscopes in which there are pictures of persons who have had much to do with the development of lenses, from Jansen in the sixteenth century to Abbe, who lived on into the early part of the twentieth century. This book is encyclopedic as far as the subject of the microscope is concerned. It would be of special interest to beginning students in biology and medicine as well as to the research investigator, whose microscope has come to be such an important aid in his work.

**Les maladies nerveuses.** Par A. Van Gehuchten. Fourth edition. Revised by Dr. P. Van Gehuchten, professeur de neurologie à l'Université de Louvain. Paper. Pp. 718, with 407 illustrations. Louvain: Librairie Universitaire, 1936.

The author adheres to the purpose of his father, which was to prepare a practical textbook of nervous diseases that would be useful to medical students and general practitioners. He has purposely avoided controversial topics and rare maladies. An introductory chapter contains general information on the anatomy and physiology of the nervous system. This is followed by the main body of the work, which includes descriptions of the organic diseases of the peripheral nerves, muscles, spinal cord, brain stem, cerebellum, cerebrum and meninges. Fifty-three pages is then devoted to the functional diseases hysteria, neurasthenia and the traumatic neuroses. A satisfactory alphabetical index appears at the end. While there is a profusion of illustrations, many are small, indistinct and not well labeled. This contribution does not serve the purpose of a reference book, and the reader will often be disappointed by his failure to find information on such subjects as narcolepsy, the more modern treatment of myasthenia gravis and diseases of the sympathetic nervous system. Names of other writers are infrequently encountered, and not a single reference is given. The book fulfils the purpose which the author had in mind when he wrote it.

**Microbiology and Pathology for Nurses.** By Charles F. Carter, B.S., M.D., Director, Carter's Clinical Laboratory, Dallas, Texas. Cloth. Price, \$3. Pp. 682, with 152 illustrations. St. Louis: C. V. Mosby Company, 1936.

The major portion of the book is devoted to a well outlined and balanced course in bacteriology. The chapter on immunity is clearly presented, with an excellent discussion of the complement fixation reaction. The constant stress of relationship of the subject under discussion to practical nursing problems is noted throughout and is best observed in the chapters on disinfection and sterilization. The color plates and the other illustrations are well selected. The suggestions for laboratory exercises and questions are an aid to the instructor. References, although few, are well selected. The portion of the book devoted to pathology is rather brief and does not equal the organization and presentation of the bacteriologic section. Special pathology is included, accompanied by good illustrations. The glossary of definitions of common terms will be appreciated by the student.

**Klinik und Therapie der Herzkrankheiten und der Gefässerkrankungen: Vorträge für praktische Ärzte.** Von Privatdozent Dr. D. Scherf. Third edition. Boards. Price, 6.90 marks. Pp. 290, with 10 illustrations. Vienna: Julius Springer, 1936.

The material in this edition as in previous ones is presented in simple fashion without at the same time sacrificing much in the way of accuracy. The presentation avoids the repetitious and cumbersome style usual in textbooks. The exposition is based on the author's own experience and that of the entire Viennese school. The author not only presents the clinical facts but also attempts to explain them rationally. In this edition there is added a section on the diseases of the peripheral vessels, on the cardiac arrhythmias and on the Adams-Stokes syndrome and allied conditions. Many useful diagnostic and therapeutic suggestions will be found. Naturally, some of the observations contained are not widely held in this country, but

little controversial material is presented. For example, the idea that the pulse is small in mitral stenosis is not the universal experience. There is too much stress laid on proprietary drugs and multiple combination of drugs. However, the author rightfully condemns the current American tendency to give tremendous doses of digitalis. This excellent, simple, authoritative presentation of the modern aspects of diseases of the heart and blood vessels is highly recommended for the medical student, practitioner and internist.

**Squint Training.** By M. A. Pugh, M.R.C.S., L.R.C.P., Medical Officer in charge of the Orthoptic Department, Royal London Ophthalmic Hospital. Cloth. Price, \$2.75. Pp. 117, with 42 illustrations. New York & London: Oxford University Press, 1936.

In this booklet Miss Pugh has outlined in detail the non-surgical management of squint as it is practiced at the Royal London Ophthalmic Hospital (Moorfields). The forms of squint are classified as to physical defects, refraction error, fusion defect and psychologic, and each class is discussed as to the results to be expected by orthoptic training. Then the methods of training are gone into in detail, according to the class of squint present, and end results are recorded. Considerable space is devoted to the various types of instruments used. In this connection it is interesting to note that no mention is made of instruments that involve motion, thereby tacitly refuting the extravagant claims of the American manufacturers of recent years. On the whole, the booklet is well written and informative. As it deals with the recent exacerbation of a fairly ancient topic and presents a balanced point of view, it is worth reading.

**A Text-Book of Pathology.** By W. G. MacCallum, Professor of Pathology and Bacteriology, The Johns Hopkins University, Baltimore. Sixth edition. Cloth. Price, \$10. Pp. 1,277, with 697 illustrations. Philadelphia & London: W. B. Saunders Company, 1936.

In this edition MacCallum's textbook has been thoroughly revised, particularly with reference to the fields of endocrine disturbance, vitamin deficiencies and virus infections. The general purpose of the author remains unchanged, and the subject of pathology is approached from the aspect of etiology and pathogenesis. The morphologic and functional aspects of disease are considered in their manifestations in the body as a whole, rather than as they affect various organs individually. Such an approach is especially valuable to beginning students, as they in this way develop the habit of thinking of disease as it affects the patient as a whole. This textbook has long been a favorite with both students and teachers of pathology because of its superb illustrations and charming style. The book is intended for beginners and for that reason many subjects are treated quite briefly; references to the literature, however, chosen by the author "to direct the student to readable and comprehensive papers which review the subject and give further and more complete references," enable the student to go into the subject in more detail. This book will continue to serve its purpose of making the study of pathology a fascinating and absorbing task.

**Relief slizistoy zheludka i dvenadtsatiperstnoy kishki; gastrit, yazva, kartsinoma.** [By] I. G. Shlifer. Ukrainsky Gosudarstvenny Rentgenologicheskyy i radiologicheskyy Institut. Pod redaktsiyei G. I. Kharmandaryana. [Relief of Gastric and Duodenal Mucous Membrane in Gastritis, Ulcer and Cancer.] Cloth. Price, 9 rubles, 70 kopecks. Pp. 356, with 156 illustrations. Kharkov: Gosmedizdat Uk. S. S. R., 1935.

In his monograph, Shlifer reviews the history of the development of the roentgenologic method of study of the contour of the gastroduodenal mucous membrane. This is followed by a comprehensive discussion of the anatomy and the physiology of the gastroduodenal mucosa and the technic of roentgenologic investigation of the normal contour. Special chapters are devoted to the presentation of the value of the method in the diagnosis of gastritis, gastric duodenal ulcer, and cancer of the stomach. Well selected roentgenograms from the author's extensive material (the Ukrainian Roentgenologic-Radiologic Institute) enhance the theoretical discussion. The author stresses the point that the new method is not a supplement to the old method but a part and parcel of the roentgenologic study of stomach and duodenum. The method makes it possible to detect the early functional deviations, thus adding to the number of both direct and indirect roentgenologic signs. The literature on the subject is well covered and appended.

**The Anemias.** By Janet M. Vaughan, D.M., M.R.C.P., Assistant in Clinical Pathology, The British Post-Graduate Medical School. With notes on Normal and Pathological Erythropoiesis. By Hubert M. Turnbull, D.M., F.R.C.P., Director of the Bernhard Baron Institute of the London Hospital. Second edition. Cloth. Price, \$4.50. Pp. 309, with 33 illustrations. New York & London: Oxford University Press, 1936.

After a brief discussion of normal erythropoiesis and erythropoietic activity the author offers a rather complete classification of the anemias and thereafter condenses into a small volume a brief discussion of each of the types presented in the classification. Consideration of each of the anemias is clear, concise and unencumbered by lengthy discussions. Although reference to previously published data is largely limited to the works of English and a small group of American authors and the discussions of treatment of the various forms of anemia are somewhat too limited for practical purposes, the book should be a distinct aid to those who are familiar with the various laboratory procedures available for the study of hematologic problems in the differential diagnosis of the several anemias. Because of the extent of the subject matter considered and the author's clear cut and easily readable presentation, the book is particularly to be recommended for the recent graduate in medicine and as a reference book for the physician who has occasion only infrequently to encounter problems in anemia.

**A Manual of Practical Obstetrics.** By O'Donel Browne, M.B., B.Ch., B.A.O., Assistant Gynecologist, Sir Patrick Dun's Hospital, Dublin. Cloth. Price, \$6.50. Pp. 363, with 246 illustrations. Baltimore: William Wood & Company, 1936.

This manual is devoted entirely to practical obstetrics. The illustrations are simple, mostly line drawings, but effective in bringing out the facts to be illustrated. The text is concise and readable and brings out the essential points. The book is not entirely adapted to the American practitioner, as a terminology is employed that is not commonly used in the United States. Some of the illustrations and text describe operations in the lateral posture, which position is seldom used here. Some operations are described which are seldom if ever employed in this country, such as pubiotomy for dystocia and jejunosotomy for cases of hyperemesis. The incorporation of chapters on blood typing and obstetric radiology is of definite value. The treatment of various conditions differs in many instances from that generally employed in this country; for example, the use of tents for dilation of the uterine cervix is almost obsolete, and forcible dilation of the cervix of the woman in labor by manual or instrumental methods is generally condemned.

**A Short Practice of Surgery.** By Hamilton Bailey, F.R.C.S., Surgeon, Royal Northern Hospital, London, and R. J. McNeill Love, M.S., F.R.C.S., Surgeon, Royal Northern and Metropolitan Hospitals, London. Third edition. Cloth. Price, 28s. Pp. 995, with 763 illustrations. London: H. K. Lewis & Co., Ltd., 1936.

This edition, published in June, now is in one volume. The previous reviews of the first two editions placed special emphasis on the clinical applicability of the text. The authors have added thirty-two additional illustrations so as to visualize the disease processes more accurately. The various classifications help to organize the subject material and simplify its further clinical consideration. Congenital malformations, with their recognition and treatment, are quite inclusive. The chapters on bone and joint diseases are descriptive and comprehensive. This volume serves the dual purpose of furnishing an introductory textbook to the student and a readily accessible textbook to the general practitioner. The new edition is a highly satisfactory addition to the manuals of general surgery.

**Manual of Roentgenological Technique.** By L. R. Sante, M.D., Professor of Radiology, St. Louis University School of Medicine. Third edition. Cloth. Price, \$4.50. Pp. 226, with illustrations. Ann Arbor, Michigan: Edwards Brothers, Inc., 1936.

This volume was prepared primarily for aid in the training and supervision of roentgenographic technicians and secondarily for the use of the general medical profession. It is written in simple language and published by the lithographic printing method to provide flexibility in making additions to and eliminations from the text. After a brief historical introduction the book develops the subject from a physical and mechanical point of view of x-ray technic and then discusses essential factors in roentgenologic procedure and dark room technic. The remain-

ing portions of the book are concerned with standard precautions for protection from excessive x-ray exposure and instructions to the technician. The book is plentifully supplied with excellent illustrations, with pages for inserted notes and with a comprehensive and excellent index. Its wide use in schools for x-ray technicians has established its practical character.

## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Voluntary Patient at Government Narcotic Farm Entitled to Release on Demand.**—The federal narcotic farm at Lexington, Ky., was constructed by the federal government primarily for the confinement and treatment of prisoners convicted of offenses against the United States who are addicted to the use of narcotic drugs. Provision is made, however, whereby any narcotic addict may voluntarily become an inmate of the institution, subject to the following conditions:

"No such addict shall be admitted unless he voluntarily submits to treatment for the maximum amount of time estimated by the Surgeon General of the Bureau of the Public Health Service as necessary to effect a cure. . . . Provided, That if any addict voluntarily submits himself to treatment he may be confined in a United States narcotic farm for a period not exceeding the maximum amount of time estimated by the Surgeon General of the Bureau of the Public Health Service as necessary to effect a cure of the addiction or until he ceases to be an addict within the meaning of this chapter: And provided further, That any person who voluntarily submits himself for treatment at a United States narcotic farm shall not forfeit or abridge thereby any of his rights as a citizen of the United States; nor shall such submission be used against him in any proceeding in any court, and that the record of his voluntary commitment shall be confidential and not divulged."—*Title 21, United States Code, Annotated, sec. 232.*

Lloyd, a narcotic addict, applied for admission as a voluntary inmate to the narcotic farm, agreeing to the conditions of admission, and was admitted. Before the maximum amount of time estimated by the Surgeon General of the Bureau of the Public Health Service as necessary to effect a cure had expired, Lloyd demanded his release. The demand was denied and he petitioned the United States district court, eastern district, Kentucky, for a writ of habeas corpus.

The superintendent of the narcotic farm, in answer to the petition, asserted that Lloyd was still an addict with extremely unstable personality, with inebriate impulses and emotional instability, that he had not received the maximum benefit of the prescribed treatment, and that in the opinion of the medical board he should not be released from the institution. The superintendent further contended that Lloyd had signed an agreement to comply with all the conditions of admission and thereby granted to the officials lawfully in charge of the farm authority to use any reasonable method of restraint to prevent his departure until eligible for release under the terms and conditions of his contract. The contention of the superintendent, said the court, was apparently that the purpose of the act was to authorize specific enforcement of the terms and conditions of the contract entered into by a voluntary inmate by subjecting him to compulsory confinement at the institution for the time specified in the contract. But, said the court, if the act be so construed, serious constitutional barriers to its validity would be encountered. The fifth amendment of the federal constitution provides that no person shall be deprived of liberty without due process of law and the thirteenth amendment provides that involuntary servitude, except as a punishment for crime whereof the party has been duly convicted, shall not exist within the United States. The contention urged by the superintendent, the court observed, would necessarily carry with it the implication of power to enforce on a voluntary inmate all prescribed rules and regulations, including the power to coerce labor in shops, factories or other industries established on the farm for the manufacture of commodities and supplies for the United States government. The fact that Lloyd at some previous time consented to submit himself to confinement does not withdraw the enforced imprisonment from the condemnation of the provisions of the federal constitution

referred to above. The intent of the constitutional provisions could be defeated with obvious facility if citizens could be held to involuntary servitude or enforced imprisonment, through the guise of contracts.

Furthermore, the court said, the fact that an act of Congress authorizes the making of a certain character of contract does not carry the implication that Congress intended to grant to one contracting party the power or authority to use force or coercion on the other party to prevent his breach of the contract. The guaranteed constitutional rights embrace the right not only to make contracts but also to terminate or renounce them, leaving the remedy for the breach of civil damages, subject only to the jurisdiction of equity to decree specific performance in proper cases. The fact that the beneficial effect of the act as a regulatory measure, designed to promote law observance, good order, morals, peace and safety, may be defeated without the power to enforce observance of admission agreements in cases of voluntary patients is immaterial, the court said. The right to regulate such matters within the several states is not delegated to the federal government but is reserved to the states. The federal laws that have been enacted to regulate, within the several states, the possession of and traffic in narcotic drugs have been upheld because they are revenue measures. Their constitutional support rests solely in the taxing power granted by the constitution to the federal government. Such results as may be derived from them within the several states in the promotion of peace, morals and general good order are merely incidental and afford no basis for their constitutional validity.

Compulsory detention of a voluntary patient in the institution, the court continued, as a means to accomplish his enforced observance of the terms and conditions of his contract of admission, is entirely out of harmony with the letter as well as the manifest spirit of the law. The act is charitable and benevolent in respect to voluntary patients and not penal or criminal in its nature. The government may fix the terms and conditions on which admission to the narcotic farm and the privilege of sojourning there may be granted to those who voluntarily seek to avail themselves of its benefits and opportunities for treatment. With respect to such patients, however, compliance with such terms and observance of all prescribed rules and regulations may be enforced only so long as they voluntarily remain as patients or inmates of the institution. The privilege of abiding at the institution may be denied or withdrawn, but the law does not authorize coercion of continued acceptance of the government's charity and benevolence by subjecting voluntary patients to compulsory confinement or detention at the institution, even though such enforced confinement may be for their personal welfare and in specific performance of the patient's agreement to submit thereto.

The court accordingly granted the petition for a writ of habeas corpus.—*Ex Parte Lloyd, 13 F. Supp. 1005.*

## Society Proceedings

### COMING MEETINGS

- American Academy of Orthopedic Surgeons, Cleveland, Jan. 11-13. Dr. Philip Lewin, 55 East Washington St., Chicago, Secretary.
- Eastern Section, American Laryngological, Rhinological and Otological Society, Boston, Jan. 7. Dr. D. C. Jarvis, Quarry Bank Bldg., Barre, Vt., Chairman.
- Middle Section, American Laryngological, Rhinological and Otological Society, Chicago, Jan. 11. Dr. Alfred Lewy, 25 East Washington St., Chicago, Chairman.
- Mid-Western Section, American Laryngological, Rhinological and Otological Society, Chicago, Jan. 11. Dr. Frederick A. Figg, 436 Tenth Ave., S.W., Rochester, Minn., Chairman.
- Puerto Rico, Medical Association of San Juan, Dec. 18-20. Dr. Dolores M. Pinero, Ave. Fernandez Juncos, Parada, 19, Santurce, Secretary.
- Society of American Bacteriologists, Indianapolis, Dec. 28-30. Dr. I. L. Baldwin, College of Agriculture, University of Wisconsin, Madison, Wis., Secretary.
- Southern Section, American Laryngological, Rhinological and Otological Society, Memphis, Tenn., Jan. 13. Dr. Charles D. Blassingame, Physicians and Surgeons Bldg., Memphis, Tenn., Chairman.
- Southern Surgical Association, Edgewater Park, Miss., Dec. 15-17. Dr. E. Alton Ochsner, 1430 Tulane Ave., New Orleans, Secretary.
- Western Section, American Laryngological, Rhinological and Otological Society, San Diego, Calif., Jan. 30-31. Dr. David R. Higbee, 3245 Fourth Ave., San Diego, Calif., Chairman.
- Western Surgical Association, Kansas City, Mo., Dec. 11-12. Dr. A. H. Montgomery, 122 S. Michigan Blvd., Chicago, Secretary.

## Current Medical Literature

### AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers in continental United States and Canada for a period of three days. Periodicals are available from 1926 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them. Titles marked with an asterisk (\*) are abstracted below.

#### American Journal of Diseases of Children, Chicago

52: 773-1046 (Oct.) 1936

- \*Congenital Muscular Hypertrophy. B. E. Hall, F. W. Sunderman and J. C. Gittings, Philadelphia.—p. 773.
- Serum Cholesterol Values for Children. F. M. Offenkrantz and M. Karshan, New York.—p. 784.
- Effect of Moccasin Venom on Urinary Changes in Scarlet Fever. S. S. Schneiersson, J. D. Lytle and S. M. Peck, New York.—p. 796.
- \*Second Attacks of Poliomyelitis in Macacus Rhesus Monkeys. J. A. Toomey, Cleveland.—p. 802.
- Respiratory Metabolism in Infancy and in Childhood: XVIII. Respiratory Exchange in Premature Infants—Basal Metabolism. II. H. Gordon and S. Z. Levine, New York.—p. 810.
- Estimation of Vitamin D in Blood Serum. J. Warkany, Cincinnati.—p. 831.
- Study of 330 Premature Infants. D. A. Wilcox, New York.—p. 848.
- Involution of Adrenal Glands in Newly Born Infants: Biochemical Inquiry into Its Physiologic Significance. H. Bruch and D. J. McCune, New York.—p. 863.
- Epidemic Lymphocytic Meningo-Encephalitis: Report of Thirty-Seven Cases Occurring in Philadelphia. E. L. Noone, K. Habel and Helen E. Riggs, Philadelphia.—p. 870.

**Congenital Muscular Hypertrophy.**—In addition to the case of Hall and his associates, possibly five other cases have been reported in the literature. In their case there were an abnormally high excretion of creatine and creatinine in the urine and an exaggerated response in the creatine excretion to variations in the amount of protein ingested. The concentrations of potassium, inorganic phosphate and phosphatase in the blood serum were high. The greatly hypertrophied voluntary muscles were normal histologically and in their reaction to electrical stimulation. Any of the main features of the syndrome may be subject to considerable variation. The pathologic process responsible for the disturbance in the extrapyramidal system is uncertain. The four patients whose cases were reported previously died during the first twenty months of life. Two of DeLange's patients apparently died as a result of the disease. The authors' patient has lived longer than any of the others. After his discharge from the hospital he was admitted to an institution for the feeble-minded, and he was reported in January 1936 to be thriving, at the age of 2½ years, without any change in his muscular overdevelopment. The differentiation of the syndrome from myotonia congenita (Thomsen's disease) may be made on the basis of the age at which it appears, the clinical picture, electrical stimulation of the voluntary musculature and biopsy of muscles. In congenital muscular hypertrophy, hyper-tonia associated with massive hypertrophy of the musculature of the body is present at birth, there is no difficulty in the initiation or cessation of movements, the reactions to electrical stimulation are normal and biopsies show normal muscles. The syndrome appears to be easily differentiated from the pseudo-hypertrophic type of muscular dystrophy. The latter condition is invariably accompanied by muscular weakness and exhibits histologic degenerative changes in the muscle fibers. The high total creatinine nitrogen coefficient observed in the present case is of unusual interest. Schiff and Balint, while studying the excretion of creatine and creatinine in the urine of infants with various diseases of the muscular system, observed one patient with a high total creatinine coefficient. Their diagnosis was encephalitis, but their observations suggest that their case might belong in the group under discussion. The increase in the concentration of potassium and inorganic phosphate in the serum, as well as the increase in the excretion of creatine and creatinine in the urine, may be related to the increase in muscular development and metabolism, since the concentrations of potassium and inorganic phosphate are normally higher in muscle tissue than in blood serum. The authors cannot explain

the occurrence of a high phosphatase content in the serum of their patient. There was no evidence of disease of the bones or of the liver in the clinical observations or roentgenograms.

**Second Attacks of Poliomyelitis in Macacus Rhesus Monkeys.**—Toomey states that Macacus rhesus monkeys that received injections of virus either by way of the gastro-intestinal tract or intracerebrally and that had paresis or limited palsies as a result contracted the disease again when subsequently given injections of homologous virus intracerebrally. Animals that had severe quadriplegia after the introduction of the first or of any subsequent injection of the virus seemed to be protected from the effects of doses ordinarily used in experimental work. The animals that showed ordinary quadriplegia and recovered, irrespective of the dose of the virus, were probably immune, since they did not contract the disease again even when repeated intracerebral injections were given of doses as high as 2 cc. of a 10 per cent virus suspension. Quadriplegia developed between six and ten days after injection in five animals that were given 0.2 cc. of a 1 per cent solution and also in five others given 2 cc. of a 10 per cent solution of the same virus suspension. Irrespective of the original dose, the animal that had quadriplegia seemed to be protected not only from the usual dose required to produce the disease but from many multiples of that dose. Paul and Trask's lack of success with reinoculation may be due to the fact that they employed the same dose and percentage of virus for both the original and the subsequent injections. When they used a heterologous strain of virus, they were able to reinfect the animals easily, as were Burnet and MacNamara. It may be that virus differs only quantitatively and not qualitatively. The evidence that there are qualitative differences is based on the generally accepted belief that an animal is not reinfecting with a homologous strain of virus but that it may be reinfecting with a heterologous strain. This report casts doubt on the validity of the assumption that reinoculation of homologous virus cannot reinfect monkeys.

#### Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

36: 293-436 (Sept.) 1936

- Superior Pulmonary Sulcus Tumor: Case Exhibiting Malignant Epithelial Neoplasm of Unknown Origin with Pancoast's Syndrome. I. Graef and I. Steinberg, New York.—p. 293.
- Cholecystographic Findings Following Cholecystostomy. E. L. Jenkinson, Chicago, and J. M. Foley, Peoria, Ill.—p. 301.
- Diaphragmatic Hernia and Diverticulum of Esophagus. J. F. Elward, Washington, D. C.—p. 305.
- Ectopic Stomach: Case Report. D. W. English, St. Louis.—p. 309.
- Bilateral Fracture of Anatomic Neck of Humerus: Case Report. L. E. Snodgrass, Philadelphia.—p. 310.
- Osteoplastic Metastasis in Papillary Carcinoma of Bladder: Case Report. S. K. Livingston, Hines, Ill.—p. 312.
- Relation of Endocrine System to Malignancy. C. L. Martin, Dallas, Texas.—p. 314.
- \*Radiation Therapy of Inoperable Intra-Abdominal Malignancy, with Especial Reference to Stomach. E. A. Merritt, Washington, D. C.—p. 324.
- Treatment of Cancer of Skin by Divided Doses of High Voltage Roentgen Rays. R. Dresser and C. E. Dumas, Boston.—p. 332.
- Developmental Changes Following Irradiation. W. S. Newcomet, Philadelphia.—p. 338.
- \*Use of Long Target-Skin Distances in Roentgen Therapy. Edith H. Quimby, New York.—p. 343.
- Comparative Clinical Value of Supervoltage Roentgen Therapy: Case Reports. T. Leucutia, Detroit.—p. 350.
- A Year's Experience with 800 Kilovolt Roentgen Rays. H. E. Ruggles, San Francisco.—p. 366.
- \*One and One-Half Years' Experience with Supervoltage Roentgen Rays, with Especial Reference to Carcinoma of Urinary Bladder and Cervix Uteri. C. B. Ward, J. E. Wirth and J. E. Rose, Seattle.—p. 368.
- Release of Ultraviolet Radiation from Roentgenized Substances by Visible Light. O. Glasser and I. E. Beasley, Cleveland.—p. 381.
- Roentgen Cinematography. R. Janker, Bonn, Germany.—p. 384.
- Factors Influencing Quantitative Measurement of Roentgen-Ray Absorption of Tooth Slabs: V. Theory of Step Tablet. H. C. Hodge and S. L. Warren, Rochester, N. Y.—p. 391.

#### Radiation Therapy of Abdominal Malignant Growths.

—Merritt avers that the diagnosis of a gastric malignant condition can be made with a higher degree of accuracy by the roentgen examination than by any and all other methods, not excepting exploration and the microscopic section. The sensitivity of the malignant stomach to irradiation is readily determined by subjecting the patient to radiation therapy. Now that the fractional method of Coutard or its modification is coming into general use, one may determine within a period of two or three weeks at most the degree of tumor sensitivity,

which applies to malignant neoplasms of the stomach as well as to other suspected intra-abdominal malignant tumors. The author has advocated preoperative irradiation of obscure abdominal tumors for some years and has never observed that it delayed or prevented recovery. On the other hand, there is indubitable proof of its great value as a life saving measure. Of thirteen patients treated since January 1934, three are living and apparently well and free from all evidence of disease, roentgen examinations of their stomachs having been made recently. One is living with roentgen evidence of disease. Nine are dead of the disease. These cases were treated without regard to the condition of the patient or the extent of involvement of the stomach, and most of those who died and one of the living patients were in a dying condition when treated. Subjects suffering from malignant disease of the stomach tolerate treatments very well. Treatments are given daily, after the modified Coutard technic.

**Long Target-Skin Distances in Roentgen Therapy.**—Quimby shows that relative depth doses for various target-skin distances can be calculated according to the inverse square law. If actual depth doses are known for any distance, they can be calculated for any other, at least between 50 and 150 cm. The increase in depth dose with distance is small near the surface and becomes steadily greater with increasing depth. It is not, however, advantageous to use distances greater than ten to twelve times the depth of the tumor. It is known that the time necessary to deliver a specified amount of radiation increases as the square of the distance. From a practical point of view, this increase in time is an important economic factor. From a biologic aspect it introduces complications because of differences in tissue recuperation. It would be expected to make the use of long distances more valuable in radioresistant than in radiosensitive conditions. The problem of localization of the field with regard to the lesion becomes increasingly important with the use of longer distances.

**Supervoltage Roentgen Rays in Cancer Therapy.**—From clinical observations, Ward and his associates are convinced that 800 kilovolt roentgen rays have a distinct advantage in depth dose over 200 kilovolt roentgen rays, and that this advantage becomes more apparent when smaller ports are used. Excellent primary regression has been obtained in a few cases in almost every type of neoplastic disease in which the 200 kilovolt units might be effective. Among these there have been ten cases of carcinoma of the urinary bladder and seven cases of carcinoma of the cervix uteri that serve as a yardstick with which to measure progress. Of the ten cases of advanced carcinoma of the urinary bladder treated by supervoltage roentgen rays, four show complete primary regression of the disease, which has now lasted from eight to fourteen months without recurrence. One patient probably had complete primary regression of the disease, but 12 millicuries of radon in gold seeds was added cystoscopically five weeks after completion of the roentgen therapy. Nine months has elapsed without recurrence. In one patient the major portion of the bladder tumor regressed, but 29 millicuries of radon in gold seeds was inserted through a suprapubic cystostomy in the extravescical extension and mucosa over it five weeks after completion of the roentgen therapy, and in eight months there has been no evidence of recurrence. There were four cases in which neither primary nor late complete regression of disease was obtained. One of these patients is living fifteen months after treatment, but the others died eleven, three and three and a half months after completion of roentgen treatments. These cases were treated with only two skin ports, a center anterior and posterior 12 cm. circular skin port; the smallest dose given was 3,000 roentgens to the anterior and 3,000 roentgens to the posterior field, while the larger doses were 4,200 roentgens to each of two opposing fields. By this type of set-up all the treatment given was the most effective treatment that could be given to the bladder itself without irradiating the whole pelvis. Of the seven cases of advanced carcinoma of the cervix uteri treated by supervoltage roentgen rays, two of the three cases of carcinoma of the cervical stump have shown complete primary regression of the disease for ten and six months and the other one has been apparently free from disease for ten months, but roentgen therapy was supplemented by 750 millicurie hours of radium at 1 cm. distance to the left side of the

vaginal vault and remains doubtful. Two of the four regular cervix cases have shown complete primary regression of disease, which has persisted for ten months. The other two patients did not show complete primary regression and died four and nine months after completion of treatment. These seven patients received a minimum of 3,000 roentgens to each of two ports, and a maximum to six pelvic ports made up of 1,400 roentgens to each of four lateral pelvic ports and 2,450 roentgens to each of two opposing central ports.

### American Review of Tuberculosis, New York

34: 437-560 (Oct.) 1936

- \*Use of BCG Vaccine Against Tuberculosis in Children: Eight Years' Experience. Camille Kereszturi and W. H. Park, New York.—p. 437.
- Study of Pathology of Experimental Pulmonary Tuberculosis in Rabbit. E. M. Medlar and K. T. Sasano, Mount McGregor, N. Y.—p. 456.
- Correlation of Blood Counts and Clinical Symptoms with Recovery from Tuberculosis: Statistical Study. C. H. Boissevain, A. M. Forster and B. D. Good, Colorado Springs, Colo.—p. 477.
- \*Erythrocyte Sedimentation Rate in Estimating Activity in Pulmonary Tuberculosis. W. O. Kelley, Trudeau, N. Y.—p. 489.
- Influence of Radio Ultrashort Wave Therapy on Experimental Tuberculosis in Guinea-Pigs. D. H. Kling and H. M. Rubin, Los Angeles.—p. 498.
- Effect of Thoracoplasty and Phrenic Paralysis on Total Volume of Lung and Its Component Parts. G. E. Lindskog and J. Friedman, New Haven, Conn.—p. 505.
- Pulmonary Cystic Disease. W. C. Pollock, Denver.—p. 527.
- Postsanatorium Care at the Bellevue Settlement House. Clara Regina Gross, Bellevue, N. Y.—p. 540.
- Comparative Tuberculosis Findings Among Indians and White Persons in Cattaraugus County, New York. J. H. Korn, Olean, N. Y.—p. 550.

**Use of BCG Vaccine.**—Kereszturi and Park feel that BCG vaccination is free from danger to children. They have had the same experience with 515 exposed BCG children. On the average, in some respects they did as well as the corresponding controls and in other respects better. Four of them died of tuberculosis. All four were examined post mortem and studied bacteriologically, and tubercle bacilli of human type, characteristic by culture and animal inoculation, were recovered from the organs in three cases, which means that human tubercle bacilli and not the BCG caused their death. The pus of thirty-one BCG abscesses was aspirated, cultures were taken, and the bacilli were obtained in twenty-seven. The stay of the bacilli in the human body varied from one to ten months. An increase in virulence could not be determined. In their investigation whether the BCG culture is effective in preventing tuberculosis among vaccinated children the authors observed 269 orally vaccinated BCG children, 421 parenterally vaccinated BCG, 345 controls known since birth and 410 controls not known from birth with negative initial Mantoux tests. The tuberculosis death rate among the controls known from birth is more than twice as high as among the orally vaccinated babies. On the other hand, the negative Mantoux control cases showed a tuberculosis death rate about four times as high as that among the corresponding treated group; that is, among the parenterally vaccinated BCG babies. The diagnosis of the cause of death can be considered accurate, as all but five of 101 children who died of tuberculous and nontuberculous diseases died in hospitals. It is worth while to make every effort to diminish the risk of death due to tuberculosis among children of tuberculous families by giving the BCG vaccine as early as possible. Through the use of BCG vaccine parenterally the death rate was cut only to its fourth. However, if a way could be found to reach all children of tuberculous families at birth and a means obtained to separate them from tuberculous contact, as Wallgren did, three months before and as long after vaccination until allergy to tuberculin appears, the BCG vaccine could be made much more effective. Therefore its use should be urged as a public health measure for the prevention of tuberculosis in those who have not yet become infected and who may later be exposed to tuberculosis in their own families.

**Sedimentation Rate in Estimating Activity in Tuberculosis.**—Kelley performed 1,381 sedimentation rates on 290 patients with pulmonary tuberculosis. A close correlation was found between the sedimentation rate and the roentgenogram in a study of the activity of the tuberculous process. In a series of 106 cases the leukocyte count did not appear to be quite as accurate an index as the sedimentation rate in determining activity. The comparison between the sedimentation

rate and the other clinical and laboratory observations, such as sputum, presence of moderately coarse râles and symptomatic activity, was definite but not as marked as that between the sedimentation rate and the x-ray changes. The sedimentation rate quite accurately followed the course of the disease and in some cases gave warning of relapses before new shadows appeared in roentgenograms. In 80.5 per cent of the cases with pleurisy, the sedimentation rate was abnormal. Simplification of the technic by making only one reading at the end of an hour would prove quite practical for clinical work.

### Annals of Surgery, Philadelphia

104: 321-480 (Sept.) 1936

- Restoration of Defects in Skull, with Especial Reference to Management of Intrinsic Tumors of Skull and Certain Types of Localized Osteomyelitis. H. C. Naffziger, San Francisco.—p. 321.
- Comparative Studies on Traumatic Shock Under Ether and Under Sodium Amytal Anesthesia: Experimental Research. S. F. Seeley, H. E. Essex and F. C. Mann, Rochester, Minn.—p. 332.
- Modified Dorsal Sympathectomy for Vascular Spasm (Raynaud's Disease) of Upper Extremity: Preliminary Report. R. H. Smithwick, Boston.—p. 339.
- Resection of Presacral Nerve for Dysmenorrhea and Pelvic Pain. W. D. Abbott, Des Moines, Iowa.—p. 351.
- Experimental Production of Chylothorax by Occlusion of Superior Vena Cava. A. Blalock, R. S. Cunningham and C. S. Robinson, Nashville, Tenn.—p. 359.
- Acute Suppurative Pericarditis. J. H. Heyl, New York.—p. 365.
- Gastrointestinal Surgery. J. E. Storde, Honolulu, Hawaii.—p. 373.
- Peritonitis as Factor in Mortality of Gastro-Intestinal Surgery. P. Shambaugh, Boston.—p. 382.
- Induced and Spontaneous Changes in Blood Amylase, Particularly in Relationship to Pancreas: Experimental Study. I. Friedman and W. R. Thompson, New Haven, Conn.—p. 388.
- Inguinal Hernia: Report of 1,600 Operations. L. S. Fallis, Detroit.—p. 403.
- Tetanus: Experience in Episcopal Hospital in Past Thirty Years (1905-1935). J. W. Klopp, Philadelphia.—p. 419.
- Perineal Prostatectomy: Survey of Sixty-Seven Consecutive Cases. W. W. Baker, Philadelphia.—p. 424.
- Rhabdomyosarcoma of Neck. L. W. Frank, C. D. Enfield and A. J. Miller, Louisville, Ky.—p. 431.
- Surgical Treatment of Tumors of Peripheral Nerves. E. C. Cutler and R. E. Gross, Boston.—p. 436.
- Benign Metastasizing Hemangioma. J. M. Robinson and B. Castleman, Boston.—p. 453.
- Importance in Surgery of Blood Circulation Time. G. Webb, W. Sheinfeld and H. Colin, Brooklyn.—p. 460.

**Modified Dorsal Sympathectomy for Raynaud's Disease of Upper Extremity.**—Smithwick has employed a modified dorsal sympathectomy in twenty-three cases of vascular spasm of the upper extremities. The technic consists of a vertical paramedian incision about 6 cm. long, 3 cm. from the midline, the incision being centered opposite the second dorsal spinous process. The inner inch of the third rib and corresponding transverse process are resected. The inner  $1\frac{1}{2}$  inches of the second and third intercostal nerves are resected from the intervertebral foramen outward. The dorsal sympathetic trunk is identified between the second and third dorsal ganglions and is sectioned just below the third dorsal ganglion; the upper end of the sectioned trunk is brought out of the thorax and sutured without tension to the muscles of the back. The intercostal nerves are resected in order to guarantee a complete ramisection and also as an additional safeguard against regeneration. This results in a zone of anesthesia about the thorax, which becomes so narrow in a few months that it is a matter of no importance. The axillary region remains quite anesthetic and perspiration is inhibited. By this operation all possible sympathetic connections between the dorsal cord and the brachial plexus are severed except those which might be contained in the first dorsal nerve. The author believes that only preganglionic fibers are divided in this operation and that the postganglionic fibers to the arm are left intact. The clinical results to date would indicate that few if any efferent sympathetic fibers to the hand pass over the first dorsal nerve. From a clinical point of view this modified type of sympathectomy is not followed by recurrence of vascular spasm due to the action of epinephrine on the blood vessels in the sympathectomized area. This was the greatest drawback to the operation of cervicodorsal ganglionectomy and rendered that operation unsatisfactory.

**Peritonitis and Gastro-Intestinal Surgery.**—Shambaugh declares that there are certain considerations which question operative soiling as the important cause of fatal peritonitis.

The natural defensive powers of the peritoneum in experimental animals are sufficiently great to withstand a definite and considerable inoculation with bacteria, except those of great virulence, provided this inoculation is not a prolonged feeding in of organisms as from a suppurative focus or from an opening into the lumen of the intestine. That the peritoneum in man is probably almost equally resistant is evidenced by the frequent prompt recovery from peritonitis after the surgical removal of a gangrenous appendix. In addition, there is the clinical observation that there is frequently more or less unavoidable soiling when the intestine is opened at operation, and yet fatal peritonitis is the exception in such cases rather than the rule. In order to determine the relative importance of peritonitis as a cause of death following operative procedures on various parts of the gastro-intestinal tract and to investigate the cause of the peritonitis in these fatal cases, the deaths following gastro-intestinal surgery at the Peter Bent Brigham Hospital from 1913 to the present time were analyzed, only those being included in this study which were submitted to postmortem examination. Of ninety-one cases studied, there were twenty-three deaths of peritonitis. Necropsy was done in twenty-five fatalities and in these the operative procedure had been gastric resection in thirteen cases, gastrojejunostomy in nine cases, gastrojejunostomy with pyloroplasty in three cases and gastrectomy in one case. In eight cases the operation had been undertaken for peptic ulcer and in the remaining seventeen for carcinoma of the stomach. In these twenty-five cases, peritonitis was the cause of death in four. Of fourteen surgical cases of the small intestine in which necropsy was done, two deaths were due to peritonitis. Of fifty-two fatalities in which surgery of the large intestine was performed, peritonitis was found at necropsy to be the cause of death in seventeen cases. A study of the postmortem observations in the twenty-three cases of fatal peritonitis reveals the significant fact that in all but six cases a definite focus of contamination was found. This focus proved to be a grossly leaking anastomosis in five cases, a perforation through a carcinoma in three cases, and a fecal leak in three other cases, due respectively to an open appendiceal stump, the slough caused by a tight suture and the tearing out of a cecostomy tube. In five cases the infective focus was gangrenous intestine caused by impaired blood supply, and in one case the focus was a fulminating wound infection involving all layers of the abdominal wall. In only six instances, therefore, could the fatal peritonitis be attributed to contamination of the peritoneal surfaces at operation.

**Benign Metastasizing Hemangioma.**—Robinson and Castleman find that only four apparently authentic cases of hemangiomas have been reported: by Borrmann, Shennan, Ewing and Geschickter and Keasbey. They have given rise to considerable discussion because the existence of such a group has an intimate bearing on the question of the essential similarity of benign and malignant processes and because they are difficult to classify. The authors have recently had the opportunity to study a case which helps to clarify the paradox of a metastasizing benign tumor. It seems to them that the case they report is a connecting link between the four cases cited in the literature and the true angiosarcomas. Theirs is evidently an example of an apparently histologically benign tumor giving rise to malignant metastases. To assume that this is a case of multiple tumors, one would have to admit that there were numerous hemangiomatous rests, such as Ribbert (quoted by Borrmann) describes, which began to grow under the influence of local or general factors. If this were true, one would expect these secondary tumors to have been discernible either at the same time as the original tumor or certainly within a shorter period than one year. Since it is highly improbable that this is a case of multiple tumors but rather that the lesions that appeared following the original breast tumor were really metastases, they must conclude that they are dealing with a process which was malignant from the onset and that the primary tumor, in spite of the absence of histologically malignant properties, was not benign. They feel that, because the histologic structure of their case is similar to the quoted cases, especially those of Borrmann and Ewing, it is probable that the latter were also primary malignant tumors. This is in agreement with Shennan's concept that it is the occurrence of metas-

tasis which should be the deciding factor and not the histologic features. The response of this tumor to various forms of radiation shows it to be highly radioresistant.

### Archives of Surgery, Chicago

33: 545-732 (Oct.) 1936

- Chronic Thyroiditis: Comparative Analysis of 100 Cases. A. E. Wallis, New York.—p. 545.
- \*Roentgen Irradiation of Ovaries as Supplement to Surgical and Radium Therapy for Mammary Cancer. J. T. Witherspoon, New Orleans.—p. 554.
- Acute Cerebral Injuries: Analysis of Temperature, Pulse and Respiration Curves. B. Woodhall, Baltimore.—p. 560.
- Lethal Factors in Bile Peritonitis: I. "Surgical Shock." H. N. Harkins, P. H. Harmon and Jeanne Hudson, Chicago.—p. 576.
- Histopathologic Study in Case of Perthes' Disease of Traumatic Origin. Gertraude Pich, Vienna, Austria.—p. 609.
- Investigation into Wiring of Spinous Processes as Means of Internal Spinal Fixation. A. D. Kurtz and M. T. Horwitz, Philadelphia.—p. 630.
- Experimental Pulmonary Abscess: II. Transmission of Disease to Dogs by Bronchial Route. C. Weiss, A. Goldman and Marian C. Shevsky, New Orleans.—p. 649.
- Mechanical Decompression of Intestine in Treatment of Ileus: I. Effect of Stripping on Blood Pressure. A. H. Storck and A. Ochsner, New Orleans.—p. 664.
- Id.: II. Effect of Intestinal Activity. A. H. Storck and A. Ochsner, New Orleans.—p. 670.
- Endocholedochal Section of Sphincter of Oddi. R. Colp, H. Doubilet and I. E. Gerber, New York.—p. 696.
- \*Fat Embolism: Experimental Study on Value of Roentgenograms of Chest in Diagnosis. F. J. Jirka and C. S. Scuderi, Chicago.—p. 708.
- \*Primary Streptococcic Peritonitis. L. H. Pollock, New York.—p. 714.

**Irradiation of Ovaries as Supplement to Surgical Therapy for Mammary Cancer.**—Witherspoon believes that clinical and laboratory evidence and general observations support the hypothesis that roentgen irradiation of the ovaries, with subsequent estrogenic inactivity, is beneficial as an auxiliary treatment to surgical intervention and radium therapy in the treatment of carcinoma of the breast. The theory that general systemic influences, such as hormone stimulation, are a causative factor is becoming important. The extremely malignant character of cancer of the breast as a complication of pregnancy is widely recognized, and evidence is accumulating, based on general clinical impressions, which suggests that carcinoma of the breast is many times more malignant and less curable in young women in whom the estrogenic principle is still active than in patients who have passed the menopause. As previously stated, the growth-promoting action of estrogenic substance is the main factor in mammary development at puberty. Watson reported marked development of the breasts in a girl 19 years of age with hypogonadism and amenorrhea, who was given estrogenic substance in large doses. Geschickter, Lewis and Hartman investigated its action on hypertrophy of the breast and the formation of a tumor. They concluded that gynecomastia in the male and virginal hypertrophy and fibro-adenoma in the female breast are dependent on pathologic variations in the action of estrogenic substance on the duct epithelium and surrounding breast tissues. These observers have demonstrated the presence of the estrogenic principle in a fibro-adenoma of the breast. Since the rate of growth of mammary cancer in animals is accelerated by the estrogenic principle, and since hypertrophy of the breast and the formation of a benign tumor in human beings are also influenced by it, it seems logical to conclude that a malignant growth of the human breast may likewise be affected by the action of estrogenic substance. Bilateral oophorectomy retards the rate of growth of a malignant tumor of the human breast and causes regression of metastatic nodules. In the treatment of mammary carcinoma, therefore, all estrogenic activity should be destroyed by roentgen irradiation of the ovaries, since the presence of the hormone is an exciting growth factor on the breast and on the mammary cancer. Induction of the menopause, especially in young women, in the treatment of carcinoma of the breast may seem somewhat radical, but in view of the tremendous growth-promoting properties of the estrogenic principle on secondary sexual tissue this treatment is rational. Only clinical application of this auxiliary therapy will prove its value.

**Fat Embolism.**—Jirka and Scuderi used eleven dogs, weighing close to 12.5 Kg., in their experiments. Sterile oleic acid was given intravenously to six animals and sterile olive oil to five. Doses of varying amounts were used in each experiment.

They found that 0.16 cc. of oleic acid or of olive oil per kilogram of body weight is sufficient to produce changes in the pulmonary fields that may be visualized roentgenographically. These changes can be demonstrated for from five to seven days after the injection and as shortly as twenty minutes after the oil has been placed in the blood stream. A diffuse haziness or cloudiness of the pulmonary fields has been persistently present in all the experimental animals. The uniformity of their results convinces the authors that droplets of fat in the pulmonary circulation, if present in sufficient number, will always produce changes in the pulmonary fields that are detectable in roentgenograms. Roentgenograms of patients suffering from clinical fat embolism should be of definite diagnostic aid.

**Primary Streptococcic Peritonitis.**—Analysis of forty-two cases of streptococcic peritonitis leads Pollock to believe that the condition can be readily recognized in most instances when it is recognized that it is seen most frequently in infants, that it is usually preceded by pharyngitis, that the abdominal symptoms, early distention and constant pain and tenderness, are generalized and start from two to three days after the subsidence of the infection of the respiratory tract, and that the condition is definitely diagnosed by abdominal puncture, the gram-positive streptococci with pus cells being pathognomonic. The treatment depends on the severity and stage of the illness, each case being a rule unto itself. The mortality, at its lowest, is 80 per cent. The frequent severe sepsis interdicts early operation, while the peritonitis is generalized. In the interim, a continuous intravenous drip of saline solution, repeated transfusion of blood and the injection of pooled antistreptococcus serums is indicated. Laparotomy is valueless and even dangerous when the sepsis is severe. However, when the general infection is not marked and there is evidence of much peritoneal fluid, improvement is often observed when drainage is obtained by the simplest and most rapid means. The large walled-off abscesses should be drained.

### Colorado Medicine, Denver

33: 667-736 (Oct.) 1936

- Practicing Physicians and the Public Health Workers. W. W. Bauer, Chicago.—p. 684.
- \*The Head-Low Position in Tonsillectomy. C. E. Earnest and H. S. Rusk, Pueblo.—p. 692.

**Head-Low Position in Tonsillectomy.**—Earnest and Rusk assert that the view obtained in the "head-low" position enhances complete removal of all tonsillar tissue, the least trauma to the tissues, the avoidance of bleeding and the prevention of complications. The result is a confident surgeon, not hurried or worried by the difficulties of the operation. The most satisfactory support of the head is one that remains parallel to the table in tilting, in which position the head and muscles are at rest, and there is no laryngeal obstruction if the support is so that the neck is straight and in line with the axis of the body. Both the anesthetist and the surgeon are seated at the head of the patient on rather low stools, the latter a little lower. The patient's face is turned up toward the anesthetist and surgeon at about 45 degrees. The operating table is raised as high as it will normally go, or is placed on 4 inch blocks, and is tilted about 15 or 20 degrees. To complete the essentials of this position, the authors have made a head rest that will fit any table. It is adjustable by a vertical worm screw and handle below, may be extended from the table for adults, and also moves laterally, following any movement the patient may make. Being adjustable, therefore, in three directions it is quite safe, and it is suitable also for bronchoscopic examinations. A Crowe-Davis mouth-gag is used.

### Indiana State Medical Assn. Journal, Indianapolis

29: 513-558 (Oct.) 1936

- Radium Treatment of Lesions About Head, Face and Neck. W. H. Kennedy, Indianapolis.—p. 513.
- Operative Infection. F. H. Jett, Terre Haute.—p. 517.
- Theories of Sleep. W. M. Loehr, Versailles.—p. 520.
- Rectal Diseases Frequently Encountered in General Practice. H. H. Wheeler, Indianapolis.—p. 524.
- Unilateral Deafness as Sequel to Nonfatal Lightning Trauma. N. M. Silverman, Riley.—p. 530.
- Reminiscences. F. M. Ruby, Union City.—p. 531.
- Survey of Puerperal Death Rate in Typical Indiana County. C. E. Canaday, Newcastle.—p. 533.

**Johns Hopkins Hospital Bulletin, Baltimore**

59: 133-212 (Sept.) 1936

- Diffuse Aneurysmal Dilatation of Pulmonary Artery and Both of Its Branches. S. W. Jennes, Baltimore.—p. 133.  
Primary Pulmonary Arteriosclerosis: Report of Case with Marked Calcification of Pulmonary Arteries. R. F. Norris, Philadelphia.—p. 143.  
Severe Myocarditis of Unknown Etiology. Helen B. Taussig and Ella H. Oppenheimer, Baltimore.—p. 155.  
Mechanism of Hitherto Unexplained Form of Native Immunity to Type III Pneumococcus. A. R. Rich and Clara M. McKee, Baltimore.—p. 171.

**Journal of Bone and Joint Surgery, Boston**

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Osteitis Condensans Ilii. R. A. Rendich and A. V. Shapiro, Brooklyn.—p. 899.  
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Bone Metabolism: Its Principles and Its Relations to Orthopedic Surgery. A. B. Gill and I. Stein, Philadelphia.—p. 941.  
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Analysis of Results of Early Treatment of Congenital Dislocation of Hip by Manipulation and Osteoclasis for Anterior Distortion. A. Krida, P. C. Colonna and F. J. Carr Jr., New York.—p. 1018.  
Fracture-Dislocation of Elbow with Ulnar-Nerve Involvement: Reduction by Tension on Superficial Flexor Group of Muscles. A. A. Schmier, Detroit.—p. 1030.  
End Results of Fractures of Proximal Humeral Epiphysis. A. P. Aitken, Boston.—p. 1036.  
End Results in 113 Cases of Septic Hips. C. E. Badgley, L. Yglesias, W. S. Perham and C. H. Snyder, Ann Arbor, Mich.—p. 1047.  
Dislocation of Elbow Reduced by Means of Traction in Four Directions. E. H. Crosby, Hartford, Conn.—p. 1077.  
Locking of Hip Joint Due to Osteochondroma of Lesser Trochanter. D. Poverman, New York.—p. 1080.

**Treatment of Surgical Tuberculosis.**—Jeřábek considers the types of surgical tuberculosis that present grave obstacles to surgical intervention. To this group belong para-articular foci of tuberculosis. Operation is indicated in such cases only when the roentgenogram shows distinct signs of a circumscribed cavity. Sequestrums, especially the larger ones, have a tendency to spontaneous evacuation; only the smaller ones may be absorbed. That is why fistulas are often found near such a focus. In treating these and other complications, followers of conservative trends were satisfied by the application of a plaster-of-paris bandage with an aperture for the fistula, through which the dressings were changed. The author believes it necessary to eradicate foci even if secondary infection has taken place or if the abscess has not yet broken through, and that conservative treatment is too prolonged and too passive and does not prevent the possibility of eventual extension into the joint. He has the patient prepared in the customary manner and a wide operating surface is disinfected with tincture of iodine. If there are no fistulas, the foci are incised and eradicated. After removal of the diseased tissues, the cavity is tamponed with gauze moistened with physiologic solution of sodium chloride. After the hemorrhage has been stopped, the cavity is dried and filled with sterilized petrolatum. Suture of the skin is but partial, so that the secretion may drain away. If no fistula is present and there is only an abscess, it is opened and the cavity is scraped with a sharp spoon and filled with petrolatum. Petrolatum itself drains so efficiently that it can be used even in those cases in which the cavity has had a secondary infection. The use of petrolatum alone does not

require redressing of the wound, since, in the process of healing, the petrolatum is forced out. Therefore the bone is entirely unmolested, which is desirable for healing. Filling the cavity with petrolatum is proper even if no fistulas are present. The principal reason for filling the cavity is to replace the defect with material similar to osseous tissue which, through osteoblastic activity, will supply the basis for a quicker compensation of the defect. The filling is supposed to restore the disturbed stability of bone and at the same time to act as a preventive to infectious agents in the cavity. Fillings that contain disinfecting materials represent foreign bodies which irritate and cause reactions that end in elimination. Petrolatum fillings keep the cavity from filling with blood, preventing the increase of microbes on favorable ground. Bone tissue bears petrolatum exceedingly well because of its neutrality and nonirritability.

**Dislocation of Elbow.**—Crosby feels that, regardless of the type of dislocation in an elbow, four-direction traction minimizes injury to the tissues around and in the joint, thereby reduces the amount of postreduction swelling and pain and shortens the period of convalescence. The patient is placed on a stretcher with a folded sheet around the chest. The sheet is then tied or pinned to a crossbar on the opposite side of the stretcher. This fixes the chest and gives countertraction. A 4-inch muslin bandage is placed around the arm above the elbow. This bandage is tied so that it forms a loop, the lower end of which is about 6 inches above the floor. The foot is placed in this loop for traction downward. A similar bandage is placed around the forearm with the elbow flexed at 90 degrees and is tied behind the operator. The patient's wrist is grasped with the operator's left hand, thus producing traction upward, and the operator's right hand is free to manipulate the elbow joint. The patient is anesthetized, and, when muscle relaxation has been reached, the operator gives traction in four directions by leaning backward, by pressing downward with the foot through the loop in the bandage, by pulling upward with the left hand, and with countertraction across the chest. The dislocation in the elbow joint is easily reduced with a minimum of injury to the joint.

**Journal of Experimental Medicine, New York**

64: 503-672 (Oct. 1) 1936

- High Speed Vacuum Centrifuge Suitable for Study of Filtrable Viruses. J. H. Bauer and E. G. Pickels, New York.—p. 503.  
Phenomenon of Local Skin Reactivity to Bacterial Filtrates: Effect of Bacterial Filtrates Injected Intravascularly on Reactions to Antigen + Antibody Complexes. G. Schwartzman, New York.—p. 529.  
Skin Test for Detecting Group C Hemolytic Streptococcal Infection Causing Epizootic Lymphadenitis in Guinea-Pigs: Applications in Selecting Breeding Stock. J. K. Moen, New York.—p. 553.  
Specific Polysaccharides of Types I, II and III Pneumococcus: Revision of Methods and Data. M. Heidelberger, F. E. Kendall and H. W. Scherp, New York.—p. 559.  
Hypersensitiveness and Antibody Formation in Tuberculous Rabbits. J. Freund, Elizabeth H. Laidlaw and J. S. Mansfield, New York.—p. 573.  
Lipids and Immunologic Reactions: III. Lipid Content of Specific Precipitates from Type I Antipneumococcus Serums. F. L. Horsfall Jr. and K. Goodner, New York.—p. 583.  
Spotted Fever: II. Experimental Study of Fièvre Boutonneuse. G. M. Hass and H. Pinkerton, Boston.—p. 601.  
Studies on Sensitization of Animals with Simple Chemical Compounds: II. K. Landsteiner and J. Jacobs, New York.—p. 625.  
Relation Between Antianaphylaxis and Antibody Balance: I. Role of Excess of Circulating Antibody in Hypersensitiveness. M. C. Morris, St. Louis.—p. 641.  
Id.: II. Effect of Specific Desensitization on Resistance to Infection and on Antibody Balance. M. C. Morris, St. Louis.—p. 657.

**Journal of General Physiology, New York**

20: 1-144 (Sept. 20) 1936

- Growth and Respiration of Avena Coleoptile. J. Bonner, Pasadena, Calif.—p. 1.  
Changes of Apparent Ionic Mobilities in Protoplasm: I. Effects of Guaiacol on Valonia. W. J. V. Osterhout, New York.—p. 13.  
Pigments of Retina: II. Sea Robin, Sea Bass and Scup. G. Wald, Cambridge, Mass.—p. 45.  
Color Vision of Dichromats: I. Wavelength Discrimination, Brightness Distribution and Color Mixture. S. Hecht and S. Shlaer, New York.—p. 57.  
Id.: II. Saturation as Basis for Wavelength Discrimination and Color Mixture. S. Hecht and S. Shlaer, New York.—p. 83.  
Statistical Evaluation of Sieve Constants in Ultrafiltration. J. D. Ferry, Pacific Grove, Calif.—p. 93.  
Electric Impedance of Injured and Sensitized Red Blood Corpuscles. H. J. Curtis, Cold Spring Harbor, Long Island, N. Y.—p. 105.  
Analysis of Geotropic Orientation of Young Rats: X. W. J. Cruzier and G. Pincus, Cambridge, Mass.—p. 111.

**Journal of Nutrition, Philadelphia**

12: 223-328 (Sept. 10) 1936

- Relation of Season, Sex and Weight to Basal Metabolism of Albino Rat. T. C. Sherwood, Lexington, Ky., and Madison, Wis.—p. 223.
- Availability of Proteins and Inorganic Salts of Green Leaf. M. K. Horwitt, G. R. Cowgill and L. B. Mendel, New Haven, Conn.—p. 237.
- Availability of Carbohydrates and Fats of Green Leaf Together with Some Observations on Crude Fiber. M. K. Horwitt, G. R. Cowgill and L. B. Mendel, New Haven, Conn.—p. 255.
- Effect of Cystine and Casein Supplements on Nutritive Value of Protein of Raw and Heated Soy Beans. J. W. Hayward, H. Steenbock and G. Bohstedt, Madison, Wis.—p. 275.
- Losses of Vitamin C During Cooking of Peas. Faith Fenton, D. K. Tressler and C. G. King, Ithaca, N. Y., and Pittsburgh.—p. 285.
- Relation of Vitamin G to Hatchability of Hens' Eggs. R. M. Bethke, P. R. Record and D. C. Kennard, Wooster, Ohio.—p. 297.
- Effect of Ration of Hen on Vitamin G Content of Eggs, with Observations on Distribution of Vitamin B and G in Normal Eggs. R. M. Bethke, P. R. Record and F. W. Wilder, Wooster, Ohio.—p. 309.
- Effect of Polyneuritis in Chicks on In Vivo Rate of Removal of Pyruvate Injected Intravenously. W. C. Sherman and C. A. Elvehjem, Madison, Wis.—p. 321.

**Medical Annals of District of Columbia, Washington**

5: 255-286 (Sept.) 1936

- Psychotherapy in General Practice. E. Klein, Washington.—p. 255.
- Psychoanalytic Remarks on Clinical Significance of Hostility. Frieda Fromm-Reichmann, Rockville, Md.—p. 260.
- \*Sporadic Outbreak of Neonatal Pneumonia with Accompanying Skin Lesions Due to Staphylococcus Albus-Haemolyticus. C. B. Conklin, Washington.—p. 264.
- William Cline Borden (1858-1934). D. L. Borden, Washington.—p. 269.
- Fundamentals of Internal Medicine: Diseases of Nervous System. A. Schneider, Washington.—p. 276.

**Neonatal Pneumonia Due to Staphylococcus Albus-Haemolyticus.**—Conklin calls attention to an epidemic, in the nursery of an obstetric department of a general hospital, that was characterized by pustular skin lesions with fulminating respiratory infections. Multiple abscesses in the lungs of eleven fatal cases were found with the presence of Staphylococcus albus-haemolyticus. An organism obtained from one of the patients was injected into an animal in which quite typical lung lesions were found later. The presence of pustular skin lesions followed by respiratory involvement suggests that the mode of conveyance of the organism was through the blood channels to the lung and not by droplet infection. Widely fluctuating temperature reaching as high as 106 F. aided materially in the spread of infection. Publicity through the reporting of nursery infections when they occur cannot fail to bring rewards in the building of barriers against further spread and repetitions. The Dick aseptic nursery technic should be widely known and employed. It may be of importance to have nurseries adjacent to the obstetric department under the care of a pediatrician; eliminating the presence of the various obstetricians would numerically reduce the possible avenues of infection.

**Medical Bull. of Veterans' Adm., Washington, D. C.**

13: 111-200 (Oct.) 1936

- Identity of Myocarditis. L. G. Beardsley.—p. 111.
- Heart in Bronchial Asthma: Report of Nine Cases in Which Bronchial Asthma Was Cause of Death. W. A. Colton and T. Ziskin.—p. 117.
- Therapy in Cancer: Practical Considerations. J. J. Stein.—p. 130.
- Adhesive Pericarditis as Protection in Multiple Cardiac Infarction. B. H. Schlomovitz.—p. 135.
- Diphtheria Immunization with One Dose (Alum-Precipitated) Toxoid Schick Test with Park 8 and "Gravis" Toxin. C. P. Brown and S. Etris.—p. 140.
- Cardiovascular Disease Complicating Neurosyphilis Among Negro Veterans. T. T. Tildon.—p. 144.
- Clinical and Radiologic Study of Associated Cardiovascular Disease in General Paralysis. B. A. Moxness.—p. 153.
- Residuals of "Jake Leg Paralysis." W. M. Bevis.—p. 157.
- Ground Parole or Freedom Therapy. M. K. Amdur.—p. 161.

**Military Surgeon, Washington, D. C.**

79: 251-340 (Oct.) 1936

- The Medical and Hospital Service of the Veterans' Administration. C. M. Griffith.—p. 251.
- Medical Aspects of First Army Maneuvers at Pine Camp, N. Y., August 1935. J. W. Grissinger.—p. 267.
- Orr Treatment of Compound Fractures and the Fracture Problem in Time of War. J. B. Mason.—p. 279.
- Extra-Ocular Manifestations of Eyestrain. R. K. Simpson.—p. 287.
- Vertical Drainage. H. J. Banton.—p. 291.
- Proposed Solution of the Problem of the Nontransportable Wounded. J. S. Deane.—p. 293.
- Improved Mess Kit Laundry. M. P. Rudolph.—p. 296.
- Experiences of Senior Medical Officer on Transport During the World War. T. J. Burrage.—p. 301.

**New England Journal of Medicine, Boston**

215: 605-646 (Oct. 1) 1936

- Coronary Arteriosclerosis in Diabetes Mellitus. H. F. Root, Boston, and T. P. Sharkey, Dayton, Ohio.—p. 605.
- \*Congenital Dislocation of Hip: End-Result Study with Suggestions for Improved Treatment. G. W. Van Gorder, Boston.—p. 613.
- Caffeine Intoxication: Report of Case the Symptoms of Which Amounted to Psychosis. Margaret C. McManamy and P. G. Schube, Dorchester Center, Mass.—p. 616.
- Reversion of Cardiac Enlargement in Four-Year-Old Child Following Treatment for Avitaminosis. L. Rabinowitz and E. J. Rogers, Pittsford, Vt.—p. 621.
- Study of 400 Juvenile Delinquents (Statistical Report). W. B. Osgood, Dorchester Center, Mass., and C. E. Trapp, Boston.—p. 623.

**Congenital Dislocation of Hip.**—Van Gorder presents the experiences of the orthopedic staff of the Massachusetts General Hospital with congenital dislocation of the hip. During ten years there were fifty-eight cases, representing seventy-three dislocated hips. Of these, only forty-six patients, comprising fifty-five hips, could be followed to the end result. The treatment of these cases consisted in closed reductions, open reductions, open reductions with shelves and shelf operations alone, depending on the nature of the case. Traction of the Hoke type or by Kirschner wire has been used both before and after reduction in about one half of the open reduction cases. As a rule, closed reduction has been reserved for children less than 5 years of age unless special contraindications were apparent. Open reductions have been performed in children more than 5 years of age and in younger children when the closed method had failed. In the series of open reductions, a shelf operation was added only in those cases that exhibited an incompetent acetabulum. "Shelf operations alone" were performed in adults and in those children whose hips obviously could not be reduced without great trauma. In such instances the femoral head was allowed to remain in the false acetabulum. Following closed reduction, it has been the custom to immobilize the hip in its most secure position of reduction for a period of about six months and then gradually, in successive stages, to allow the leg to assume its normal anatomic position, the entire period of plaster retention not exceeding from nine to ten months. The period of fixation in plaster should be much shorter after open reduction than after the closed method, the immobilization period being regulated according to the needs of the individual case. Of the sixteen closed reductions ten hips showed excellent (perfect clinical result) end results, four hips were classified as good (slight limp but excellent clinical result) results and two hips showed a fair (definite restriction of motion) result. Of the fifteen open reductions only one hip was rated as an excellent result, three hips were rated good, five hips fair and four hips poor (small range of motion), and two hips resulted in bony ankylosis. Of the eight hips that were treated by open reduction and a shelf, no single case has been recorded as an excellent end result. Two hips showed good end results and one hip a fair result, two hips were rated as poor and three resulted in bony ankylosis. Of the sixteen hips that were treated by a shelf operation alone no cases were considered excellent, but eight hips were recorded as good end results, four were considered fair and four had poor end results. In summary, good functional results were obtained in 88 per cent of the closed reductions, in 27 per cent of the open reductions, in 25 per cent of the "open reductions plus shelves" and in 50 per cent of the cases having shelf stabilizations alone.

**New Jersey Medical Society Journal, Trenton**

33: 493-550 (Sept.) 1936

- Management of Toxemias of Pregnancy. J. F. Norton and J. N. Connell, Jersey City.—p. 499.
- Liver Deaths. J. A. Visconti, Hoboken.—p. 502.
- Chronic Endocervicitis and Treatment by Electrocoagulation. S. G. Fine, Trenton.—p. 507.
- Medical Complications of Diabetes Mellitus. I. M. Rabinowitch, Montreal.—p. 510.
- Surgery and Diabetes Mellitus. L. S. McKittrick, Boston.—p. 523.
- \*Syndrome Resembling Angina Pectoris. F. H. von Hofe, East Orange, and L. A. Eigen, West Orange.—p. 535.
- The Field Physician in Maternal Welfare in New Jersey. A. W. Bingham, East Orange.—p. 538.

**Syndrome Resembling Angina Pectoris.**—A case of paroxysmal cardiac pain, somewhat resembling angina pectoris, is reported by von Hofe and Eigen in a girl 8 years of age, in

whom the chief subjective symptom was the attack of anginoid pain. The pain was always associated with a period of syncope and accompanied by various vasomotor phenomenon (sweating, flushing, blanching of face). She has thus far had numerous attacks. The patient has a chronic rheumatic heart disease. In practically all the reported cases there is a severe degree of chronic rheumatic heart disease. The patient has been under constant observation for two and one-half years. During this entire period the physical observations and roentgenologic studies of the heart, as well as the electrocardiographic examinations, showed no evidence of any appreciable change in her cardiac status. She has had quite a number of "seizures" of varying intensity occurring at varying intervals, some of which were precipitated by emotional excitement and others by a moderate degree of physical exertion. At times there was no evident precipitating factor (the attack occurring while she was asleep). During the patient's stay in the hospital, it was suggested that hypoglycemia should be considered a possible cause for the patient's symptoms. Increasing quantities of insulin were given, 5, 8, 12, 15 and 18 units, and in no instance was an attack precipitated.

### New York State Journal of Medicine, New York

33: 1363-1472 (Oct. 1) 1936

- Menopause: Symptoms, Hormone Status and Treatment. R. T. Frank, M. A. Goldberger and U. J. Salmon, New York.—p. 1363.  
Sources of Grafts for Plastic Surgery About the Eyes. J. M. Wheeler, New York.—p. 1372.  
Silicosis: Pathology of Pneumoconioses. L. U. Gardner, Saranac Lake.—p. 1377.  
\*Id.: Differential Diagnosis of Silicosis from Other Pulmonary Diseases. G. G. Ornstein, New York.—p. 1382.  
Id.: Clinical Features and Industrial Significance of Silicosis. A. J. Lanza, New York.—p. 1386.  
Study of Ball Technic of Roentgen Pelviccephalography. F. J. Schoeneck, L. Hadley and A. VanNess, Syracuse.—p. 1389.  
Simple Milk Mixtures in Feeding of Premature Infants. A. Tow, New York.—p. 1394.  
Place of Surgery in Therapy of Peptic Ulcer. U. Maes and Elizabeth M. McFetridge, New Orleans.—p. 1399.  
Diagnosis and Treatment of Peripheral Vascular Disease by Physical Agents. W. Bierman, New York.—p. 1405.  
\*Renal Function Following Trauma of Kidney: Clinical and Experimental Study. J. H. Powers, Cooperstown.—p. 1411.  
Malignant Melanotic Tumors in the Negro: Case Report. R. E. Herold, Willard.—p. 1418.  
Between Mental Health and Mental Disease. B. Liber, New York.—p. 1421.

**Differential Diagnosis of Silicosis.**—Ornstein states that the diagnosis of silicosis should not be made unless there is a definite history of exposure to silica dust. An overseer of a group of street excavators made claim for compensation because of a pulmonary tuberculosis complicating silicosis. There was no question with regard to the diagnosis of pulmonary tuberculosis. The difficulty arose with the diagnosis of the silicosis. There was bilateral upper lobe cavitation with a bronchogenic seeding down both lungs. The diffuse bilateral bronchogenic tuberculosis was interpreted by a group of physicians as silicosis. With a history of short duration of exposure and very little chance for concentration as would occur in the open streets, the diagnosis of silicosis should have been discarded. Furthermore, in reviewing the serial roentgenogram it was noted that the maximal intensity of the bronchogenic seeding was in the first roentgenogram. From then on, the serial roentgenogram revealed a slow resolution of the diseased areas. Resolution does not occur in silicotic nodules. The nodule in silicosis either remains stationary or progresses. Whenever there is evidence of pulmonary fibrosis, one must obtain a detailed history of previous occupation. A clerk in charge of the pay roll of a gang of rock drillers was roentgenographed. He never had been exposed to silica dust. A roentgenogram of his chest was interpreted as advanced silicosis. He did have spasms of coughing and expectoration, and he became alarmed because of the diagnosis of silicosis. On examination it was found that he had fibrosis in both lower lungs secondary to nasal instillation of as much as an ounce of liquid petrolatum a day. When there is sufficient occupational history, the roentgenogram becomes the most important examination for the diagnosis of pulmonary silicosis. In the early stages of silicosis, the root and bronchial accentuation can be easily simulated by bacterial infections or by other irritants. In advanced stages of silicosis there is great difficulty in ruling out tuberculosis. The con-

fusion comes from the dense areas for which various investigators have used the term "infective silicosis." In fifty-nine cases collected at the Metropolitan Hospital a diagnosis of pulmonary tuberculosis was made, and the patients were transferred without a suspicion of an occupational disease. In this group of fifty-nine patients the diagnosis in thirteen was far-advanced pulmonary tuberculosis with sputums negative for tubercle bacilli. It is this type of case that causes so much confusion with regard to the association of tuberculosis and silicosis and is usually labeled silicotuberculosis. This group cannot be classified as clinical tuberculosis, with sputum negative for tubercle bacilli, any more than one could label other patients with fibrotic tissue in the lung and with negative sputums as tuberculous.

**Renal Function Following Trauma of Kidney.**—Powers believes that the intelligent treatment of patients with traumatic lesions of the kidney depends on a knowledge of the degree of function which the organ may be expected to regain when healing is complete. There is an occasional case in which the damage is so extensive and the hemorrhage so severe that immediate operation, preceded by transfusion and other supportive measures, is a necessity. The majority of patients, however, do not require such radical and heroic treatment. Hemorrhage from the kidney, pain, tenderness and spasm may persist for days and be followed by rapid and complete restoration of renal function. Two clinical cases of renal trauma, one moderate and one severe, have been reported. The ability of the injured kidney to excrete phenolsulfonphthalein and the pyelographic appearance of the renal pelvis promptly returned to normal in the first case. In the second instance the recovery was less rapid but equally satisfactory. Experimental observations have been submitted which demonstrate the prompt return of normal function following renal trauma of moderate severity in rabbits with only one kidney. Severe and extensive injury after unilateral nephrectomy is followed by death. Severe trauma of one kidney, if the opposite organ is intact, produces no significant change in total renal function, measured by the fractional and total excretion of phenolsulfonphthalein and the nonprotein nitrogen of the blood. If the normal kidney is removed after the critical, immediate posttraumatic period is over, the injured organ will recover sufficient function to maintain renal activity at a normal level. The clinical reports and experimental data suggest that the majority of patients with unilateral renal trauma may be treated conservatively with the expectation that the injured kidney will recover sufficient function to be a useful and serviceable organ.

### Oklahoma State Medical Assn. Journal, McAlester

29: 347-382 (Oct.) 1936

- Choice of Surgical Procedure in Peptic Ulcer. M. E. Stout, Oklahoma City.—p. 347.  
Mimics of Gastro-Intestinal Disease. M. F. Jacobs, Oklahoma City.—p. 351.  
Intestinal Parasites in Children of Tulsa and Vicinity. C. E. Bradley and Rowena Johnson, Tulsa.—p. 355.  
Factors of Safety in Gallbladder Surgery. C. C. Hoke, Tulsa.—p. 358.  
Study of Etiology and Diagnosis of Peptic Ulcer. F. M. Duffy, Enid.—p. 362.

### Pennsylvania Medical Journal, Harrisburg

39: 943-1098 (Sept.) 1936

- Screen Test and Its Modifications: Screen Parallax, Screen Maddox Rod and Screen Comitance. J. W. White, New York.—p. 943.  
Inflammatory Pseudotumor of Orbit. W. E. Fry, Philadelphia.—p. 945.  
Hazards Encountered in Gold Therapy: Report of Two Cases. A. I. Rubenstone, Philadelphia.—p. 948.  
Role of Psychiatry in Penitentiary: Study of 200 Psychotic Prisoners. C. C. Wholey, Pittsburgh.—p. 952.  
\*Bacterial Toxemia: Symptoms Simulating Systemic Diseases; Diagnosis; Treatment. M. Solis-Cohen, Philadelphia.—p. 958.  
Calculus Formation in Fracture and Traumatic Group. E. J. McCague, Pittsburgh.—p. 963.  
Perforated Gastric and Duodenal Ulcer. R. L. Schaeffer, Allentown.—p. 967.  
One-Hour, Two-Dose Glucose Tolerance Test (Exton and Rose). H. T. Kelly, Philadelphia.—p. 972.  
Congenital Ectodermal Defect: Case Report. J. D. Stevenson, Beaver.—p. 976.

**Bacterial Toxemia.**—Solis-Cohen asserts that toxins elaborated by the bacteria in a focus of infection may, without producing pathologic changes, give rise to symptoms similar to those occurring in organic disease. The symptoms simulate

those present in disease of the circulatory, gastro-intestinal, nervous, locomotor, lower respiratory and other systems, leading on the one hand to the diagnosis of systemic disease and on the other to a diagnosis of neurasthenia, hypochondriasis, and the like. Examination fails to confirm the suspicion of organic disease suggested by the symptoms but discloses focal infection. Every possible focus of infection must be examined bacteriologically by a method of culture that not only discloses all the germs present but, in addition, determines their infectivity for their host. Such a method is the pathogen-selective method, which in chronic and focal infection selects the causal organism from a mixed culture. It is necessary to distinguish between symptoms due to bacterial toxemia and those due to systemic disease, psychic disturbances, nonbacterial allergy, endocrine dysfunction and lack of vitamins. Treatment consists in the complete removal of the focus of infection, which includes the destruction of the infecting bacteria and the rendering innocuous of their toxic products through the artificial stimulation of specific antibody production. The latter is accomplished by the administration of a potent vaccine, such as the pathogen-selective vaccine, which contains both the infecting microbes and their soluble exotoxins. The initial dose of pathogen-selective vaccine depends on the result of graduated intracutaneous tests. Subsequent doses are based on the general, focal and local reactions to the preceding dose. The interval is determined by the character of the reaction to the last dose.

#### Philippine Islands Med. Association Journal, Manila

16: 535-602 (Sept.) 1936

- \*Neurologic Disturbances in Pregnancy and Their Relation to Calcium and Phosphorus Balance in Blood. B. Roxas, J. R. Katigbak and J. Leyva, Manila.—p. 535.
- Typhoid Fever in Children. A. V. Tupas and F. N. Quintos, Manila.—p. 545.
- Teratoma of Ovary with Malignant Metastasis in Childhood. F. W. Meyer, Capiz, Capiz.—p. 555.
- Study on Resistance of Metacercariae of Monorchotremia Taihookui to Different Physical Chemical Agents. E. Y. Garcia, Manila.—p. 561.
- Chemotherapy of Malaria. S. P. James, London, England.—p. 567.

**Neurologic Disturbances in Pregnancy.**—In their investigation of seventy-eight cases of pregnancy, Roxas and his associates observed hypocalcemia associated with neurologic disorders in fifty-eight. The symptoms presented were paresthesia, cramps, muscular twitchings, local edema, chest oppression, backache, brittleness of the nails, dental caries, thinning of the hair and muscular weakness. That abnormal symptoms are caused by hypocalcemia has been borne out by several observers. The probable interpretation is that there is an initial disturbance in the calcium and phosphorus balance, so that nervous symptoms begin to appear even before actual hypocalcemia exists. Then, if there is further disturbance, the calcium begins to fall and the train of symptoms makes its appearance. This disturbance is due either to a diminution of calcium or vitamin D supply or to a parathyroid insufficiency; and, from the behavior of the phosphorus, it seems that the parathyroids are also at fault, just as is the country's diet. The association of beriberi and pregnancy is another question of importance to the clinician. The result of the authors' analysis of six cases shows that in beriberi the range of calcium is normal. A further study of seventeen cases of beriberi in the nonpregnant state was conducted and the result was likewise a normal curve for the calcium concentration. If this observation is borne out in further studies, a differentiation of the two conditions in pregnancy may be aided by laboratory examinations. Other conditions which gave similar symptoms were a case of pulmonary tuberculosis and one of cardiac failure. The occurrence of neurologic disturbances in a pregnant woman should put the clinician on his guard. Avitaminosis is a treacherous enemy of such a patient. The symptoms may be so slight and unapparent as to be overlooked, only to manifest themselves disastrously after delivery. Patients who gave no symptoms or history indicative of beriberi went through a normal delivery and twenty-four hours later were found with bilateral paralysis of the legs or with footdrop and handdrop. Such patients may or may not recover. Routine calcium therapy of an antepartum case in the absence of a real indication may do more harm than good. Undue calcium administration to the expectant mother often causes serious complications during labor. The head of the fetus fails to

mold, probably because of premature calcification; labor becomes unduly prolonged and, oftentimes, must be terminated by cesarean section.

#### Psychoanalytic Quarterly, Albany, N. Y.

5: 303-464 (July) 1936

- On Projection. D. Feigenbaum, New York.—p. 303.
- Ego Development and Certain Character Problems. I. Hendrick, Boston.—p. 320.
- Euthanasia: Clinical Study. F. Deutsch, Boston.—p. 347.
- Exceptions to Fundamental Rule. R. Laforgue, Paris, France.—p. 369.
- An Abnormal Child. Editha Sterba, Vienna, Austria.—p. 375.
- Inhibitions, Symptoms and Anxiety. S. Freud.—p. 415.

#### Public Health Reports, Washington, D. C.

51: 1363-1398 (Oct. 2) 1936

- \*Resistance of Various Strains of Escherichia Typhi and Coli-Aerogenes to Chlorine and Chloramine. Lucy S. Heathman, G. O. Pierce and P. Kabler.—p. 1367.

51: 1399-1428 (Oct. 9) 1936

- Influenza Mortality in the United States, 1936. Mary Gover.—p. 1399.
- Audiometric Studies on School Children: I. Consistency and Significance of Tests Made with a 4-A Audiometer. A. Ciocco.—p. 1402.

**Resistance of Escherichia Typhi and Coli-Aerogenes to Chlorine.**—Heathman and her co-workers found that the disinfecting action of chlorine in treated waters is variable within limits. The time required for chloramine and for chlorine in some instances to kill strains of Escherichia typhosa and members of the coli-aerogenes group is appreciably greater at low temperatures than at room temperature. There is considerable variation in the resistances of freshly isolated strains of Escherichia typhosa and of members of the coli-aerogenes group to the disinfecting action of chlorine and chloramine. Certain recently isolated strains of Escherichia typhosa exhibit a greater resistance to the disinfecting action of chlorine and chloramine than do old laboratory strains that have been grown on artificial mediums for a number of years. There is a possibility of viable Escherichia typhosa persisting in waters treated with chlorine or chloramine as long as, and in some instances longer than, members of the coli-aerogenes group. These results indicate the desirability of reconsidering the significance of the coli-aerogenes group as a bacteriologic index of the safety of chlorinated water.

#### Review of Gastroenterology, New York

3: 205-290 (Sept.) 1936

- Recent Studies on Physiology of Human Intestine: Their Application to Clinical Problems. J. A. Barga and C. F. Dixon, Rochester, Minn.—p. 205.
- Correlation of Clinical and Gastroscopic Findings in Chronic Gastritis: Report of Cases. W. A. Swalm, C. L. Jackson and L. Morrison, Philadelphia.—p. 219.
- Treatment of Gastric and Duodenal Ulcer. E. Rosenthal, Budapest, Hungary.—p. 227.
- Intestinal Tuberculosis. R. J. Erickson, Albany, N. Y.—p. 238.
- Diseases of Rectum. W. Zweig, Vienna, Austria.—p. 251.
- Use of Insulin in Gastro-Intestinal Disturbances. H. Baker, Boston.—p. 258.

#### Rhode Island Medical Journal, Providence

19: 131-150 (Sept.) 1936

- \*Low Back Pain. J. G. Kuhns, Boston.—p. 131.

**Low Back Pain.**—Kuhns discusses the accumulated data on low back pain, from which he concludes that backache manifests itself as either local or symptomatic pain. Local pain is due to injury or disease of the spine and pelvis, or their supporting structures. Of injuries, sprains of the muscles, ligaments or fascia are most common, with faulty posture frequently acting as a predisposing cause. Of diseases of the spine, rheumatoid arthritis and osteo-arthritis are most common. In symptomatic backache the cause is usually a disease or functional disturbance in the abdominal or pelvic viscera, the pain being transferred to the cutaneous area of the nerve branches that supply the viscera affected. The differential diagnosis is often tedious. It must be determined whether the pain is local or referred. In referred pain, pain alone is present. Muscle spasm, tenderness and limitation of motion in the lower part of the back are indications of a lesion in that portion of the spine or its contiguous structures. Several diseases may be active at the

same time in producing low back pain. This not unlikely possibility requires that a careful physical examination be performed as well as a systematic examination of the spine and its accompanying neurologic structures, with such roentgenograms and laboratory data as may be indicated in each case. Treatment must be comprehensive. One must remember that the patient is an individual with a visceral, neurologic or spinal lesion. The patient's fears and worries as well as his adjustments to difficulties must be considered. Nothing should be left undone that will add to his health and hasten recovery. Treatment should be sufficiently long, in the realization that the processes of repair usually take place slowly, and all factors that may aid in preventing a recurrence of low back pain should be considered.

### Southwestern Medicine, Phoenix, Ariz.

20: 325-366 (Sept.) 1936

- Public Health Notes: Amebic Dysentery. J. R. Earp, Santa Fe, N. M.—p. 325.  
Gastric and Duodenal Ulcer: Medical Consideration. J. J. Gorman, El Paso, Texas.—p. 325.  
Allergic Diseases Occurring with Tuberculosis. R. A. Wilson, Tucson, Ariz.—p. 331.  
Pulmonary Complications in Atrophic Arthritis: Report of Two Cases. C. L. Dunham, Tucson, Ariz.—p. 333.  
Malignant Melanoma: Course and Treatment. O. N. Meland and L. Lindberg, Los Angeles.—p. 336.  
Surgical Treatment of Arthritic Joints. E. D. McBride, Oklahoma City.—p. 346.  
\*Prevention of Chronic Sinusitis. Rea E. Ashley, San Francisco.—p. 349.  
Bacterial and Allergic Factors in Common Colds. O. H. Brown, Phoenix, Ariz.—p. 353.  
Medical Annals of Arizona: Health Among the Navajos. S. J. Tillim, Amityville, N. Y.—p. 355.

**Prevention of Chronic Sinusitis.**—In the main, Ashley believes that the predisposing causes of chronic sinusitis can be placed in four general groups: physiologic effects, malformation of the structural framework of the nose, allergic tendencies and infections. By physiologic effects she refers to unbalanced diet, glandular dystrophies, metabolic fluctuations, excessive use of alcohol and tobacco, swimming and diving, bad ventilation, lack of sunshine and generally poor living conditions. Under malformations must be included hypertrophied tonsils and adenoids, deviated and malformed septums, enlarged turbinates, traumatic abnormalities, obstructing tumors and atresias. Allergy is an important etiologic factor in chronic sinusitis. There is a definite reason for the seemingly great increase of allergic children; namely, the substitution of various formulas all using the cow, the goat or the donkey instead of the mother for the source of food supply in infancy. There is little doubt that allergy and sinus disease frequently do go hand in hand, and, whenever this condition does exist, any treatment of one without treating the other will surely fail; and one must be particularly on guard against too active surgical treatment without the counsel of the allergist. Inflammations of the sinuses are practically all of bacterial origin; irritation caused by trauma without superimposed infection is transient. The common cold is the most frequently given etiologic factor in chronic sinusitis. Every acute head infection is potentially a chronic sinus infection. The general management of a patient suffering with a cold should be with the internist or the pediatrician, but the local treatment certainly should be left to the rhinologist. The author is of the opinion that all colds in their primary stage are allergic manifestations, that the allergy develops because of a filtrable virus made active by the failure of the body to accommodate itself to unfavorable climatic and environmental changes, that the purulent stage is due entirely to secondary invaders, and that any serious complications are due to these secondary invaders.

### Wisconsin Medical Journal, Madison

35: 769-852 (Oct.) 1936

- Brain Tumors in Wisconsin. J. C. McCarter and M. Burke, Madison.—p. 790.  
Biologic Relationship Between Erysipelas and Scarlet Fever. M. J. Fox, Milwaukee.—p. 797.  
Stone in Ureter: Methods of Diagnosis and Transvesical Removal. G. J. Thompson, Rochester, Minn.—p. 802.  
Id.: Operative Treatment. H. Cabot, Rochester, Minn.—p. 805.  
Postpartum Malignant Neutropenia and Purpura with Recovery. F. A. Thayer and R. A. Thayer, Beloit.—p. 810.

### FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

### British Journal of Urology, London

8: 205-318 (Sept.) 1936

- Urinary Calculus, with Especial Reference to Stone in Bladder. H. Lett.—p. 205.  
\*Blood Stream Infections of Kidney. H. Cabot.—p. 233.  
Trigonal Loop Traction in Suprapubic Prostatectomy: New Technique. N. Lumb.—p. 257.

**Blood Stream Infections of Kidney.**—Cabot considers blood-borne infections of the kidney and chiefly those caused by the pus-producing cocci. Various of these cocci may be found in otherwise normal urine of patients with peripheral infections, such as boils, carbuncles, septic wounds and acute infections of the upper part of the respiratory tract. To investigate the latter point more closely, forty-six patients with acute inflammatory processes about the mouth, throat and ear were studied. The group was selected from patients who had a urine normal to ordinary tests and who had some fever but no signs or symptoms suggesting an infection of the kidney. The urine was studied by smear and culture, the smear being made from urine centrifugated for a considerable period at high speed. Of these forty-six cases, thirty-two showed organisms in the smear and eighteen in the culture. A group of ten control cases, of persons apparently normal, showed a negative smear in all. In two there was a positive culture showing streptococci. The pus-producing cocci appear in the urine early in the disease; they disappear as a rule in a few days, though occasionally persisting for several weeks in an otherwise normal urine. The lesions are primarily cortical and medullary. They tend to coalesce with the production of massive abscess, usually show early and marked perinephritis, and often go on to perinephric abscess. Besides the classic methods of diagnosis, stress is laid on the value of roentgenography in the diagnosis of these cases. Clouding or obliteration of the shadow of the psoas muscle is generally discoverable in perinephric abscess by modern methods. Scoliosis is not rare but is a rather late sign. Limitation of the motion of the diaphragm on the infected side as studied by the fluoroscope is more important than the literature would suggest. Pyelography both by the excretory and the retrograde method is of extreme value. This will give precise information as to the development of massive abscess by showing deformities of the calices. It will also be of much value in showing displacement of the kidney by perinephric abscess, sometimes at an early period. Stress is laid on the value of limitation of the normal mobility of the kidney due to the early development of perinephritis, often in the absence of perinephric abscess. Observations are reported, showing diminished visualization of the infected kidney as seen in the excretory urogram. Indications for operation are the fulminating type of infection; the widespread infection of the kidney in which the patient seems unable to control the disease, as shown by the development of anemia and failing general conditions; massive abscess of the kidney as shown by the pyelogram, and perinephric abscess. Nephrectomy is indicated in the fulminating cases, nephrectomy for widespread infection, but without massive abscess when the patient is losing ground, decapsulation and drainage for cases with well localized massive abscess, and exploration for perinephric abscess. If the pyelogram shows no evidence of massive abscess or evidence of deformity of the pelvis, simple drainage is indicated; if there is perinephric abscess and evidence of massive abscess, the abscess must be drained and the kidney explored in the region indicated by the pyelogram, and, for perinephric abscess of long standing, drainage of the abscess alone is indicated in the first instance.

### British Medical Journal, London

2: 611-636 (Sept. 26) 1936

- Nutrition in Health and Disease. R. McCarrison.—p. 611.  
Acute Streptococcal Infections of Middle Ear. W. M. Mollison. p. 615.  
Acute Streptococcal Infections of Throat. E. D. D. Davis.—p. 617.  
Hemolytic Streptococcus, with Especial Reference to Scarlet Fever. D. Brewer.—p. 620.  
\*Traumatic Edema: Pitfall in Physical Medicine. L. C. Hill. p. 623.

**Traumatic Edema.**—Hill says that the circulatory, lymphatic and sympathetic nervous systems are involved in the production of traumatic edema. The breakdown of the normal

mechanism of fluid interchange is maintained by abnormal impulses from the higher sympathetic centers by way of the long reflexes, and these in their turn depend on irritating afferent stimuli from the damaged tissues, now distended with lymph. The intense bony atrophy may be due to a state of chronic venous congestion, the obstruction to the venous return following extreme distention of the part with lymph. The operation of sympathectomy, which by dilating the vessels might be expected to aggravate the situation, actually produces its beneficial effect by suppressing the long reflexes from the higher sympathetic centers. It is probable that immobilization combined with elevation, by relieving tension and promoting complete muscular and ligamentary relaxation, may modify the afferent impulses to the sympathetic ganglions. Thus a gradual toning down of the abnormal efferent influences responsible for the maintenance of the edema takes place. The successful performance of a sympathectomy probably effects its cure by a similar action. In an established case early immobilization with elevation and complete rest will not only greatly curtail the period of incapacity but prevent the resultant fibrosis. The application of physical therapy at any period other than in the late stages is unjustifiable.

### Journal of Tropical Medicine and Hygiene, London

39: 197-208 (Sept. 1) 1936

Immunity in Malaria: Therapeutic Results Obtained from Subcutaneous Infection of Immunized Blood. N. Lorando and D. Sotiriades.—p. 197.  
Culex, a New Vector of Spirochaeta Gallinarum. Margarete Zuelzer.—p. 204.

39: 209-220 (Sept. 15) 1936

Diseases of Skin in Negroes. L. J. A. Loewenthal.—p. 209.  
Duration of Treatment for Bilharziasis. F. G. Cawston.—p. 212.

### Lancet, London

2: 723-774 (Sept. 26) 1936

Development of Thoracic Surgery. F. Sauerbruch.—p. 723.  
\*Histidine Treatment of Peptic Ulcer. H. C. Barry and H. W. Florey.—p. 728.  
\*Id.: Study of 126 Cases with Immediate and Later Results. E. Bulmer.—p. 734.  
Tissue Response to Subcutaneous Injection of Cod Liver Oil. J. Davson.—p. 737.  
Vitamin A in Local Treatment of Wounds. S. Sándor.—p. 738.  
Human Infection with American Hog-Cholera Bacillus: Third Example in England. J. Boycott and J. W. McNee.—p. 741.  
Observations on Myotonia. W. R. Russell and E. Stedman.—p. 742.  
Corneal Graft in an Aphakic Eye. B. W. Rycroft and E. J. Somerset.—p. 743.

**The Histidine Treatment of Peptic Ulcer.**—Barry and Florey endeavored to test Aron's theory by experiments on cats and pigs, using the operation of experimental Meckel's diverticulum devised by Matthews and Dragstedt as a basis on which to test the efficacy of histidine. There is no interference with digestion in this operation. To examine more critically the value claimed for histidine, some of a series of cats operated on in this way were left untouched and others were given daily injections of histidine. The treated cats were each given 0.5 cc. of a 2 per cent solution of histidine monohydrochloride subcutaneously. The injections were begun on the third day following operation and continued daily till the death of the animal. Of twenty-two cats not treated with histidine, twelve died early (four from hemorrhage, three from peritonitis, two from snuffles and three from unknown causes). Nine animals lived twenty days or more after operation and developed peptic ulcers, all in the ileac loop opposite the anastomosis into the pouch. Microscopic examinations of four ulcers showed that they resembled in every way a typical chronic peptic ulcer. Of the thirty-four animals treated with histidine, twenty-five died early. The other nine lived eighteen days or more and five died from hemorrhage or peritonitis. The combined results of the experiments on pigs and cats show that histidine was incapable of preventing ulcer formation when this was caused by the action of unneutralized gastric juice on intestinal mucosa. A review of the clinical use of histidine demonstrates the difficulty in judging the therapeutic value of any drug used in treating peptic ulcer. Despite the favorable reports that have been reviewed, there is still no proof that histidine has any specific action on peptic ulcer.

**Results of Histidine Treatment of Peptic Ulcer.**—Since February 1934, Bulmer has given daily intramuscular injections of twenty-one doses (5 cc.) of histidine to 126 patients who

presented themselves at the outpatient department suffering from gastric or duodenal ulcers. A follow up was made of ninety-two patients who had been rendered symptom free, and eighty-two were traced, from which it seems obvious that ambulatory treatment with histidine has as good an effect as ambulatory treatment with a diet-alkali regimen. Both hematemesis and perforation have occurred during treatment. Only one third of the patients remained symptom free after an average period of sixteen months. Deep, callous ulcers on the lesser curvature have not been influenced favorably; some have apparently healed, as evidenced by freedom from symptoms and a normal roentgenogram, but relapse has been frequent with reappearance of the ulcer crater. While these cases are not common, some are successfully treated by radical surgical procedures, but in others technical difficulties make this impossible and they remain an unsolved problem. The author's conclusion is that histidine should be used not as an alternative but as an adjunct to the usual methods of diet and alkali, so that the patient may have the known advantages of the latter with the addition of the probable advantages of the former. It is best to order a simple diet with "feeds" between meals, with alkali or antacid, to insist on reasonable after-treatment and to repeat the injections should a relapse threaten. The treatment should be reserved for simple, uncomplicated ulcers, for patients with ulcers of the stomach and for those in whose case the usual methods have failed. Ambulatory treatment under these conditions appears to be safe and effective, and there do not seem to be any toxic incidents, as none were encountered in more than 3,000 injections.

### Medical Journal of Australia, Sydney

2: 283-314 (Aug. 29) 1936

Loss of Consciousness Due to Circulatory Causes. A. S. Walker.—p. 283.  
Radiology and Heart Disease: The Medical Aspect. K. Maddox.—p. 290.  
Radiology in Relation to Heart Disease. K. B. Voss.—p. 296.

2: 315-346 (Sept. 5) 1936

Loss of Consciousness of Primary Neurogenic Origin. A. S. Walker.—p. 315.  
Observations on Physical Signs in Diseases of Chest. C. H. Fitts.—p. 321.  
\*Early Diagnosis and Treatment of Intracranial Injuries of the New-Born. R. H. Nattrass.—p. 326.  
Massive Pulmonary Embolism. J. B. Cleland.—p. 329.

**Intracranial Injuries of the New-Born.**—Nattrass declares that many infants who survive have intracranial injuries. The greater number will have no more than small hemorrhages and small tears of the tentorium cerebelli or edema of the adjacent parts. But others may survive with extensive intracranial injuries; and he has seen infants who have survived for eight days in whom postmortem examination revealed an old hemorrhage as big as a fist and extensive damage of the dural septums. In those who survive, the clinical signs and symptoms are neither uniform nor characteristic. They are usually present at or soon after delivery; but occasionally the symptoms do not appear for three or four days, because bleeding continues slowly for the first few days and the accumulation of blood eventually becomes great enough to produce signs or symptoms. The infant is usually born in a condition of asphyxia, generally of the pallid type, and is often difficult to resuscitate. If respiration is established, it may be noticed in the next few days that the respirations are slow and irregular, and there are often attacks of cyanosis. Often the child is noticed to have convulsions, neck rigidity, perhaps unequal pupils, and strabismus or nystagmus. A most important point is that the sucking reflex is often impaired. In the majority of cases of intracranial injury, hemorrhages both of the infratentorial and of the supratentorial types occur, so that it is not usually possible to decide where the hemorrhage is likely to be. The most important thing is that, as long as the obstetrician thoroughly appreciates his responsibility for the early recognition of the injuries and carefully observes the new-born infant immediately after birth and during the first few days, he will probably not miss the infant's suffering from these injuries and so will be able to carry on with treatment immediately. To confirm one's sus-

picians, lumbar puncture not only determines the diagnosis but is of definite therapeutic value; for as the result of the relief of the increased intracranial pressure by lumbar puncture, the danger of later impairments can be lessened and even avoided. Practically the only treatment in the resuscitation of the newborn is to remove any mucus from the throat by means of a mucus catheter and to encourage attempts at respiration by gentle traction on the tongue with tongue forceps at the rate of about twenty pulls per minute, together with the injection of a cardiorespiratory stimulant. Should the infant attempt to breathe, carbon dioxide may be of some value. If the infant does not respond to this gentle treatment within a minute or two he must be considered as having potential brain injuries, and small hemorrhages may soon prove fatal if vigorous manipulations are resorted to. While the tongue manipulations are being carried out, the infant should be left in a warm bath or in warm blankets. If the infant with injuries responds to this treatment, it should then be placed in a warm cot, preferably in a darkened room. It should not be put to the breast until all apparent danger is over but should be fed by bottle, or by pipet if the sucking reflex is impaired. Attacks of cyanosis may be treated by the use of oxygen and carbon dioxide.

### South African Medical Journal, Cape Town

10: 597-624 (Sept. 12) 1936

- Pentothal Sodium in Anesthetics. C. W. H. van der Post.—p. 599.  
Evipan Sodium in Country Work. J. J. de Villiers.—p. 601.  
\*Is Sympathectomy Justified by Its Results? R. S. Verster.—p. 603.  
Dyspepsia of Nonorganic Origin. P. Leftwich.—p. 605.  
Posttyphoid Suppurative Osteitis. W. Campbell and E. C. Greenfield.—p. 607.  
Destruction of Bilharzia Parasites of Man. F. G. Cawston.—p. 608.

**Is Sympathectomy Justified?**—Verster believes that sympathectomy should be resorted to only when all the conservative methods have failed. It is useless to expect any result by performing lumbar ganglionectomy, e. g., in chronic constipation, because such good results are obtained in Hirschsprung's disease. From the "sympathetic" point of view these diseases are totally different and sympathectomy must not be expected to perform miracles. When the choice has been correctly made a preoperative test should always be performed first, with operation only in cases showing a rise of skin temperature above 5 degrees. In causalgia these tests have no value, and every other possible cause must be excluded for this condition. Sympathectomy is at most only a symptomatic treatment and not a cure. In relieving the vasoconstriction, the progredient calcification in the larger vessels or the obliterative arteritis is not cured. Advantage can be derived from ganglionectomy or sympathetic block carried out before or immediately after operations or injuries that involve obstruction or threatened obstruction to large arteries of the extremities. Only when these principles are adhered to may one expect some consistency in the results and thus establish sympathectomy on a surer basis whereby it may regain much of the credit it has lost in the past.

### Journal of Oriental Med., Dairen, South Manchuria

25: 1-32 (July) 1936

- Lobus Electricus and Nervi Electrici in Narke Japonica. N. Suzuki.—p. 1.  
Innervation of Salivary Glands in Hedgehogs. H. Seto and U. Fukuyama.—p. 13.  
Examination on Innervation of Human Gum, with Especial Regard to Morphology of Nerve Terminations in Normal and Pathologic Conditions, Supported by Tests on Experimental Animals: Part III. Experimental Tests on Animals. T. Hosaka.—p. 15.  
Experimental Research on Changes in the Sensory Nerve Endings of the Gums in Poisoning by Ergot. T. Hosaka.—p. 17.  
Arteries of the Thighs of the Chinese. K. Miyashita.—p. 18.  
Accessory Nasal Sinuses in the Chinese: I. Maxillary Sinus. N. Toida.—p. 21.  
Contribution to the Knowledge of the Cranium of Chinese Children. H. Sakai.—p. 23.  
The Lower Jaw of Chinese Children: III. Communication. H. Sakai.—p. 24.  
Morphologic Studies of Muscles of Ear of the Chinese. S. Takeya.—p. 25.  
Anthropologic Studies on Chinese Miners in Fuschun. S. Takeya.—p. 27.  
Contribution to the Knowledge of the Dental Arch of the Chinese. N. Hada.—p. 31.  
Morphologic Studies on the Dental Arch. S. Ohshima.—p. 32.

### Archives Franco-Belges de Chirurgie, Brussels

35: 209-296 (March) 1935-1936

- Diverticular Sigmoiditis. P. Hillemand and J. Charrier.—p. 215.  
Primary Tuberculosis of Uterus. P. Tison and C. Dazin.—p. 230.  
Morquio's Disease and Familial Dystrophic Ligament Hyperlaxities. G. Giraud and J. M. Bert.—p. 246.  
Complete Evipan Anesthesia (Sodium Salt of N-Methyl-Cyclo-Hexenyl-Methyl Barbituric Acid). J. Gautier.—p. 256.  
Fractures of Calcaneum. Hamant and L. Grimaud.—p. 265.  
\*Subarachnoid Air Injections in Epilepsy. Y. Delagenière.—p. 271.  
Integral Statistics of Operations Performed in Mans During the Years 1931, 1932 and 1933. Y. Delagenière.—p. 278.

**Air Injections in Epilepsy.**—Delagenière discusses four cases of epilepsy in which air injections were given by the lumbar route. In two instances the aim was therapeutic, and in two diagnostic only. In three cases the generalized attacks of known or unknown traumatic origin completely ceased after the injection and in two of these disappeared permanently. In discussing these observations, the author states that it seems that in jacksonian epilepsy the attacks can be favorably influenced by the injection of air into the subarachnoid spaces, while in essential epilepsy attacks cannot be influenced in any lasting fashion. He cannot advance a satisfactory hypothesis to explain these results. Nevertheless, the innocuousness and simplicity of the treatment deserve recognition and further study.

### Gynécologie et Obstétrique, Paris

34: 177-256 (Sept.) 1936

- "Aigrette" of the New-Born. Fruhinsholz and Hartemann.—p. 177.  
\*Tuberculosis of Uterine Body of Hemorrhagic Form. N.-C. Lapeyre and H.-L. Guibert.—p. 182.  
\*Ascension of Trichomonas Vaginalis. E. Hees.—p. 191.  
Trichomonas Vaginalis in Leukorrhoeas. G. Tempé.—p. 201.  
Thoracoplasty and Pregnancy. A.-I. Blisnjanskaja and A.-I. Lasarevitch.—p. 207.

**Tuberculosis of Uterine Body.**—Lapeyre and Guibert report a case of tuberculosis of the body of the uterus. The principal symptom of the patient, who was 36 years of age, was uterine bleeding for about one year. The first diagnosis was fibroma, and treatment by roentgen rays was proposed. Later, hystero-graphy revealed the existence of a congenital malformation giving the uterine cavity a bicornate aspect and showing an irregular lacunar defect of the mucosa. Subtotal hysterectomy was later performed. The histopathologic analysis of the uterus and tubes showed the presence of giant cells and caseous tubercles. Miliary infiltration of the uterine muscle with true infarction by tuberculous granulation was seen. The case reported was of considerable interest from the standpoint of diagnosis and of the use of x-rays in the diagnosis. The authors believe that tuberculosis of the uterine body is not as rare as is often considered.

**Ascension of Trichomonas Vaginalis.**—Hees discusses the part played by Trichomonas in inflammatory lesions about the vagina. In one patient the anemia, loss of weight and abundant menstruations were due to Trichomonas invasion. Eventually a chronic purulent salpingitis was produced. When Trichomonas reaches the upper portions of the genital tract, it never causes temperatures above 39 C. Generally the temperature oscillates between 38 and 38.5 C. for several days and thereafter returns to normal or below. The author concludes from his study of this case and of others that it is possible to demonstrate Trichomonas vaginalis microscopically in ovarian cysts, chronically inflamed tubes, the placenta, the peritoneum, the endometrium, the blood, the male spermatic fluid and the internal organs of the embryo. Trichomonas is as common as the gonococcus and its specific ability to produce local and general tissue injury is far from negligible. Initially, Trichomonas involves only the vagina, but it frequently causes ascending disorders, characterized in various ways. It is impossible to deny its toxic effect on the central nervous system and the general state of the patient. As a rule, however, it may be completely cured.

### Presse Médicale, Paris

44: 1481-1496 (Sept. 23) 1936

- New Technic of Autoclave Sterilization of Surgical Material. A. Gosset and P. Hauduroy.—p. 1481.  
Ear and Parathyroid. A. Malherbe.—p. 1484.  
\*Treatment of Recurrent Suppurative Sinusitis. N. Taptas.—p. 1486.

**Treatment of Recurrent Suppurative Sinusitis.**—Taptas discusses the various operative procedures for treatment of frontal sinusitis. He proposes a modification of technic which

embodies essentially the creation of a frontomaxillary opening followed by resection of the fronto-ethmoidal cells and the opening of the sphenoidal sinus. Because of the radical nature of this procedure, he discusses the indications for operation. In general, all the steps of the operation should be performed only when more conservative treatment has failed to prevent recurrence.

44: 1497-1520 (Sept. 26) 1936

\*Local Immunity of Intestine. A. Besredka.—p. 1497.  
Reactivation of Gonococcus Reaction for Etiologic Diagnosis of Rheumatism. F. Coste, R. Demanche and P. de Charmant.—p. 1499.  
Positional Treatment in Course of Artificial Pneumothorax. J.-P. Lelong and E. Peyret.—p. 1502.

**Local Immunity of Intestine.**—Besredka discusses the nature of immunity. From the standpoint of experimental studies on local immunity, he believes that the mouse is too small and the monkey too expensive to serve as adequate experimental animals. In most of his tests, therefore, the rabbit has been used, and the intestinal resistance decreased by the use of bile. In this way it is possible to use the rabbit in testing the effectiveness of oral vaccination with typhoid, paratyphoid bacilli and others. Experiments of this nature added to a considerable list of epidemiologic statistics indicate that local vaccination of the intestine, which aims at the specific reinforcement of natural local immunity, is based on as solid ground as is vaccination by subcutaneous means. Even though oral vaccination in man still has some disadvantages compared with subcutaneous vaccinations, it also offers the advantage of localized tissue immunity over the latter.

### Schweizerische medizinische Wochenschrift, Basel

66: 1001-1024 (Oct. 17) 1936

Hormone Relationship Between Mother and Child. H. Guggisberg.—p. 1001.

Bony Changes and Blood Diseases in Childhood. Péhu.—p. 1007.

Histophysiologic Consideration of Relation of Bone Disease to Blood Diseases. M. Péhu and A. Policard.—p. 1011.

\*Practical Value of Serum Diagnosis in Gonorrhea. F. Schaaf and W. Burckhardt.—p. 1011.

Clinical Studies of Addison's Disease. F. Mainzer.—p. 1014.

### Practical Value of Serum Diagnosis in Gonorrhea.

Schaaf and Burckhardt's clinical experience with the complement deviation test in gonorrhea convinced them that a positive reaction may be obtained in a certain percentage of both uncomplicated and complicated cases of gonorrhea. A certain parallelism appeared to exist between the strength of the reaction and the clinical course in the cases of gonorrheal complications but not in the uncomplicated cases. However, even in the former there were cases in which there was found a great divergence between the clinical course and the degree of retardation of the hemolysis. The authors are at a loss to explain this discrepancy as well as the fact that in some instances they had obtained a negative complement absorption test in the presence of gonococci, or a positive test in their absence. Serologic test for gonorrhea is indicated in arthritis of uncertain origin and in adnexitis, epididymitis and prostatitis in which there is a suspicion of gonorrheal etiology. The reaction is of less value in cases of urethritis of indefinite etiology, cervicitis or proctitis. It is well to remember in this connection that the gonorrheal complement deviation reaction makes its appearance not infrequently from two to five weeks after the acute onset of the complication and under certain conditions may become once more negative after a few days or weeks. The test therefore must be performed at the proper time and frequently repeated. A negative reaction does not rule out gonorrhea. The reaction in some cases may be positive for only a short time. The cure of genital gonorrhea cannot be determined by a negative test in view of the discrepancy between it and the finding of the gonococci in the genital secretions. A positive reaction is a strong argument in favor of the gonorrheal nature of the condition. The microscopic search for gonococci, however, must not be omitted. A positive gonorrheal complement deviation test in the absence of gonococci is merely suggestive and assumes a decisive value when considered along with a characteristic history and clinical symptoms. The test is of no value in patients treated with gonorrheal vaccine, since a single injection of it may produce a positive deviation. The authors conclude that the gonorrheal complement deviation reaction is helpful in diagnosing obscure cases of gonorrheal complications when considered in conjunction with the clinical signs and bacteriologic study.

### Pensiero Medico, Milan

25: 253-280 (Sept.) 1936

Treatment of Gangrenous Abscess of Lung. E. Moretti.—p. 253.

\*New Syndrome from Industrial Poisoning. C. Bellesini.—p. 269.

**New Syndrome from Industrial Poisoning.**—Bellesini reports industrial poisoning from percutaneous absorption of diphenylarsinic acid. The syndrome consists in development of fever, papulous erythema, especially on the uncovered skin (face, hands and arms) and intense nervous symptoms. The symptoms regress slowly after discontinuation of work or may be so intense as to cause death. One of the victims, in a group of four patients treated by the author, died. The author emphasizes the importance of protecting workers against the acid by frequent washing of the floors and cleansing of the utensils and by giving the personnel protective dresses, gloves, shoes and masks. The author's article is a preliminary report.

### Policlinico, Rome

42: 479-534 (Oct. 15) 1936. Surgical Section

\*Thiemia in Surgical Diseases. U. Bracci.—p. 479.

Transplantation of Ureter into Bladder: Further Experiments. D. Ciddio.—p. 506.

Mens Agitat Molem: Study on Pathogenesis of Peptic Ulcer. B. Schiassi.—p. 514.

**Thiemia in Surgical Diseases.**—The average amount of normal thiemia found by Bracci is 36.4 mg. per thousand cubic centimeters of blood. A fraction of 24 per cent of the total amount of sulfur in the blood is neutral sulfur, which is the most important and constant fraction. Thiemia increases in surgical diseases, especially in peritonitis. The variations include the several fractions of total sulfur, especially neutral sulfur. The changes result in a diminution of the coefficient of oxidation with parallel increase of the neutral sulfur-total sulfur ratio. The changes of thiemia in renal and liver diseases depend on the preservation of the functions of the kidney and the liver. The variations of the neutral sulfur-total sulfur ratio are an index of the functions of the liver. A high ratio, indicating a quantity of more than 40 per cent of neutral sulfur in the blood, shows grave alterations of the liver functions and an unfavorable prognosis. The small amount of thiemia found by the authors in surgical spleen diseases conflicts with the opinions in the literature, according to which the spleen seems to be concerned with the production of neutral sulfur. Total sulfur and the neutral sulfur fraction greatly increase in diseases associated with skin pigmentation. The increase seems to be due to latent adrenal insufficiency. Thiemia changes after operations. The changes depend on the intensity of trauma, the type of anesthesia used and the performance of an operation on organs that are concerned in controlling the sulfur metabolism or normal thiemia. Operations are generally followed by a diminution of the acid sulfur fraction and an increase of the neutral and total sulfur with resultant increase of the neutral total sulfur ratio. The changes are due to augmented autolysis of traumatized tissues, decreased functions of the organs concerned with the elimination of sulfur, especially the liver, effects of general anesthesia and the postoperative fasting. Operations on the liver or biliary tract by which the functions of the structures are restored bring immediately a high neutral sulfur-total sulfur ratio down to normal. Following splenectomy, ligation of the splenic artery and lumbosacral sympathectomy, the total sulfur and the acid sulfur fraction increase and the neutral sulfur fraction and the neutral sulfur-total sulfur ratio diminish. Following blood transfusion the total sulfur, its acid and neutral fractions and the neutral sulfur-total sulfur ratio increase. Intense increase of the ratio is followed by development of a serious general reaction, which is due to plasmatic colloid disturbances.

### Riforma Medica, Naples

52: 1337-1368 (Oct. 3) 1936

Chronic Appendicitis and Pseudo-Appendicitis. G. Cavina.—p. 1339.

\*Relations Between Gastric Chemism and Erythropoiesis. E. Lombardi and J. A. Cino.—p. 1343.

**Gastric Chemism and Erythropoiesis.**—Lombardi and Cino state that there is a relation of interdependence between the gastric chemism and erythropoiesis, as proved by the development of anemia following gastrectomy, the increased erythrocytosis in patients suffering from hyperchlorhydria and

gastroduodenal ulcer, and the presence of hyperchlorhydria in patients suffering from erythremia. They studied the behavior of erythropoiesis in relation to the modifications of the gastric acidity, induced in man by intravenous injections of sodium benzoate and in dogs by intravenous injections of sodium benzoate or subcutaneous injections of histamine hydrochloride. The intravenous injections of sodium benzoate induce in both human beings and dogs a simultaneous diminution of the erythrocytes and of the total acidity and free hydrochloric acid in the gastric secretion. The subcutaneous injections of histamine hydrochloride in dogs have the same results. The variations in the number of erythrocytes do not depend on an uneven distribution of the erythrocytes in the blood of the peripheral and visceral vascular territories, as is proved by the fact that the number of erythrocytes in the blood from the ear and from the heart of dogs in the authors' experiments was almost the same. The authors conclude that the variations of the gastric chemism induce parallel variations of the erythropoiesis and they admit the existence of the so-called achylous anemia and hyperchylous erythremia.

### Rivista Ospedal. Giorn. di Med. e Chir., Rome

26: 409-468 (Aug.) 1936

Vascular Insufficiency of Extremities: Pathogenesis and Treatment. G. Barbera.—p. 409.

Systematic Examination of Right Iliac Fossa in Chronic Appendicitis. E. Giupponi.—p. 443.

\*New Method for Preventing Postoperative Complications in Prostatectomy. P. Blasucci.—p. 448.

**Preventing Postoperative Complications of Prostatectomy.**—Blasucci states that most of the grave complications following prostatectomy are caused by sepsis. He prevents development of the latter by means of a postoperative procedure, which he describes as follows: A thick rubber tube is introduced in a pear-shaped Hagner bag at its base. Immediately after enucleation of the prostate a Nelaton catheter is introduced into the urethra. (The catheter is previously perforated with small holes through its entire length to allow irrigation of the urethra.) The tip of the Nelaton catheter is drawn out through the hypogastric wound and fixed to the apex of the pear-shaped Hagner bag. Traction is then applied to the Nelaton catheter at the urethra so that the Hagner bag enters the bladder and fits snugly in the cavity left by removal of the prostate. The bag is inflated through the rubber tube, which comes out at the hypogastric wound according to the intensity of hemorrhage. If the latter is not controlled, slight traction is made on the Nelaton catheter in the urethra so that the bag fits more closely into the cavity left by removal of the prostate. After the hemorrhage has stopped for a few hours the traction of the Nelaton catheter is released and the cannula of a Dakin drip is connected to the free end of the Nelaton catheter to allow the diluted solution of sodium hypochlorite to flow in drop by drop. In this manner the prostatic cavity is continuously irrigated and sterilized by the antiseptic solution, which then flows into the bladder and out through the suprapubic drain. Generally the patients do not like the procedure, but the results are satisfactory. The postoperative evolution is uneventful and none of the grave (sometimes even fatal) complications of prostatectomy set in. Since the procedure has been carried on by the author, sepsis has been less frequent in his cases and the time necessary for the patient to recover has been shorter than previously.

### Prensa Médica Argentina, Buenos Aires

23: 2361-2406 (Oct. 14) 1936

Friedreich Disease as Syndrome: Case. J. Pereyra Kafer.—p. 2361. Anatomohistologic Study of Appendices of Infants Obtained in Necropsies. Teresa Malamud.—p. 2375.

Chronic Purpura and Biliary Lithiasis: Case. R. Gernich, J. M. Palazon.—p. 2390.

\*Alkali Reserve in Depressive Psychoses. Paulina H. de Rabinovich.—p. 2393.

**Alkali Reserve in Depressive Psychoses.**—According to de Rabinovich, anxiety and depression are psychoneuroses originated in alkalosis which depends on rupture of the acid base balance due to sympathetic disturbances. She determined the alkali reserve in thirty-five patients suffering from psychoses, especially of the melancholic and anxiety types. In all cases there was alkalosis, which was more intense in cases of melan-

choly with anxiety. The author believes that her results support the theory of the pathogenic rôle of alkalosis in depressive and anxiety psychoses and points out the advisability of administering acidifying drugs and a diet aiming to control alkalosis. According to the literature (Laignel-Lavastine), the antialkalotic treatment gives promising results in controlling the mentioned forms of psychoses.

### Revista Médica Latino-Americana, Buenos Aires

21: 1229-1342 (Aug.) 1936

Present State of Knowledge on Vitamins: General Review. P. Labig-nette.—p. 1229.

Nervous System in Diseases of Sugar Metabolism. A. Dias.—p. 1239.

Subacute Diffuse Glomerulonephritis of Extracapillary Form: Case. H. Chabanier and C. Lobo Onell.—p. 1250.

Surgical Therapy of Ozena. A. Alcaino.—p. 1263.

\*Cysts of Mesentery. C. Lugones and D. A. Molina.—p. 1282.

**Cysts of Mesentery.**—Lugones and Molina made a study of congenital cysts of the mesentery with especial reference to those of a lymphatic origin (serous and chylous cysts). They state that the early symptoms of congenital cysts of the mesentery are the increased size of the abdomen and the appearance of gastric disturbances, abdominal pain and a round, smooth, mobile tumor at the periumbilical region. As a rule, the condition follows a benign evolution, unless the tumor is too large or adhesions are formed. In such cases grave disturbances, especially dependent on compression of the organs and vessels, set in. In cases of gastro-intestinal disturbances of long duration the nutritional disturbances of the patient result in cachexia. The treatment is surgical. It consists in the removal of the cyst with the involved segment of the intestine. The author reports three cases of congenital cysts of the mesentery (dermoid in one case and serous cysts in two others). Two of the cases were in children. In one of the cases the tumor recurred sometime after the operation. From observations in their cases and from a review of the literature on the subject, the authors modified Donati's classification of congenital cysts of the mesentery by including in the group serous and chylic mesenteric cysts. The form and histologic nature of the cysts and the physiologic and anatomic relation between chyle and lymph prove that both types of cysts are of congenital lymphatic origin. According to the authors, congenital cysts of the mesentery are in a latent condition, owing to a special predisposition of the mesentery. The development of the cysts depends on the action of certain unknown determining factors by which the latent condition is stimulated first to evolve into the cyst formation and then to continue its growing.

### Semana Médica, Buenos Aires

43: 1033-1104 (Oct. 15) 1936. Partial Index

Esophago-gastroscopy: Heyrowsky's Operation. R. C. Ferrari and O. A. Itoiz.—p. 1033.

Renal Amyloid Lipoidosis and Amyloid Sclerosis: Case. T. Martini and M. Litter.—p. 1046.

\*Exophthalmic Goiter and Hemorrhagic Thrombocytopenic Purpura. R. Finochietto, E. B. del Castillo and A. S. Parodi.—p. 1059.

Ulcer of Duodenum: Resection and Exclusion. G. H. Dickmann and J. L. Curutchet.—p. 1062.

Electrocardiographic Curve in Case of Myocardial Infarct. J. Espejo Solá.—p. 1073.

\*Methylene Blue in Treatment of Psoriasis. M. D'Agostino and E. Torres.—p. 1080.

**Exophthalmic Goiter and Hemorrhagic Thrombocytopenic Purpura.**—Finochietto and his collaborators report a case of exophthalmic goiter associated with hemorrhagic thrombocytopenic purpura. The development of the latter preceded that of the former. The patient was treated by a subtotal thyroidectomy and has practically recovered from hyperthyroidism. The satisfactory results persist after a year and a half. The purpura improved from both the clinical and hematologic points of view. Thrombocytopenia persists (30,000 platelets). According to the authors, their case proves that purpura is of idiopathic origin and not secondary to hyperthyroidism. In the authors' case the two diseases have a common origin; that is, both originate in a pathologic condition of the bone marrow.

**Methylene Blue in Treatment of Psoriasis.**—D'Agostino and Torres report satisfactory results in treating psoriasis with intravenous injections of a 2 per cent solution of methylene

blue in double distilled water, a diet poor in proteins and fats but rich in vitamins, and local application of Brocq's ointment. The renal functions of the patient are previously determined, because the treatment is to be administered to persons with good renal functions or grave renal complications may set in. The injections are given slowly in doses of 5 cc. of the solution for the first one, 7 cc. for the second and 10 cc. for the remainder. They are given three times a week up to fifteen or twenty injections. The ointment, which is locally applied, consists of 1 Gm. each of chrysophanic, salicylic and pyrogalllic acids, 10 Gm. each of ichthammol, tar and hydrous wool fat and 30 Gm. of petrolatum. The tolerance of the skin to the ointment is previously tested by applying it to a small area. The ointment is not to be applied to the scalp. For the latter, as well as in cases of sensitive skin, the ointment can be replaced by local applications of cade oil or any ointment containing salicylic acid. With these precautions the treatment is not dangerous. So far the authors have treated seven patients. There was recovery in two cases, improvement in four cases and failure in one case. However, the time elapsed since discontinuation of the treatment has not been long enough to assure them that no recurrences will take place.

### Monatsschrift f. Geburtshilfe u. Gynäkologie, Berlin

103: 1-124 (Aug.) 1936. Partial Index

- Treatment of Postpartum Hemorrhages, with Especial Consideration of Henkel's Method. Herold.—p. 1.
- Amputation of Pregnant Uterus. G. von Bud.—p. 8.
- \*Familial Occurrence of Uterine Myoma. H. Winkler.—p. 11.
- \*Ulcerative Colitis and Pregnancy. M. Saegesser.—p. 14.
- Fatalities from Cesarean Operations. Hüsey.—p. 16.
- \*Pathogenesis of Acute Hydramnion. G. Gaetgens.—p. 40.

**Familial Occurrence of Uterine Myoma.**—Winkler points out that, in view of the high incidence of uterine myomas, it is difficult to furnish definite proof for a hereditary transmission of this condition. Nevertheless, he decided to investigate the problem on the material passing through his clinic. He encountered considerable difficulties in that most of the women knew little about the disorders of their blood relations and the idea of tumor of the uterus is extremely indefinite in lay circles. However, he observed three sisters who required treatment for uterine myoma and they stated that their mother likewise had had a benign uterine tumor. Although at the time of operation the sisters were 37, 42 and 44 years of age, there were indications, such as repeated abortions, which indicated that uterine myomas existed long before surgical treatment was resorted to. The author further mentions a number of other investigators who have observed the familial occurrence of uterine myomas. The cases of the three sisters are important also because all three had symptoms that are characteristic for exophthalmic goiter. The search for corroborating evidence of a causal connection between myoma and goiter failed. Moreover, most patients with myoma have characteristics that incriminate hypothyroidism rather than hyperthyroidism. Consequently, the author suggests that the disturbance in the thyroid function and myoma formation are coordinated symptoms of a superimposed ovarian function. In this connection, he cites Hofmiller, who in a large necropsy material of women with myoma observed that 51 per cent had changes in the thyroid and 30 per cent had changes in the ovaries. He thinks that this furnishes an explanation of the vasolability of most women with uterine myoma, for it is well known that dysfunction of the thyroid leads to cardiac and vascular disturbances.

**Ulcerative Colitis and Pregnancy.**—Saegesser points out that diarrheal conditions, which have a causal connection with pregnancy, have been described by Seitz and by Condi. He himself observed two women who, in the course of pregnancy, developed ulcerative colitis. After describing the histories of these patients, he admits that the concurrence of the ulcerative colitis with pregnancy may be accidental. However, the fact that the bacteriologic examination was negative excludes an infectious cause and in the second case, particularly, there was evidence that the pregnancy had some etiologic significance, for the woman developed colitic conditions in her three pregnancies, and her intestinal function was normal again each time after the colitis had healed. The author thinks that the persistence of the symptoms of colitis beyond the puerperal period does not neces-

sarily exclude a causal relationship with the pregnancy, because ulcerative colitis causes anatomic changes, which frequently prove extremely refractory. The author points out that the etiology of ulcerative colitis is not yet completely explained but that a sympathetic hyperirritability is often regarded as a factor. Moreover, such a condition may readily become aggravated by pregnancy. The author suggests that the differences between the cases of colitis reported by Seitz and Condi and his two cases of ulcerative colitis are probably only a matter of degree of severity.

**Pathogenesis of Acute Hydramnion.**—Gaetgens says that the pathogenesis of hydramnion has been ascribed to various factors. Observations have proved that this anomaly of the amniotic fluid may develop in several systemic diseases of the maternal organism, such as diabetes, syphilis and renal and cardiac disorders. Acute hydramnion has been observed also after local trauma. In most, if not in all cases, twin pregnancies were involved in the cases in which a trauma preceded the development of the hydramnion. Thus it suggested itself that the peculiar circulatory conditions of such pregnancies were responsible for the development of an acute hydramnion. The author describes the histories of two cases and in the discussion stresses once more the high incidence of cases of hydramnion in twin pregnancies. Both described cases likewise involved twin pregnancies. He emphasizes that the acute hydramnion of twin pregnancies develops as the result of the cardiac decompensation of the stronger of the two twins. But although it may be said in general that stasis in the fetal circulation is responsible for an excessive production of amniotic fluid, it is not necessarily a cardiac decompensation that forms the basis of this stasis. The anamnesis of the second case reported by the author indicates the importance of a traumatic influence.

### Münchener medizinische Wochenschrift, Munich

83: 1255-1294 (July 31) 1936. Partial Index

- Problems of Insulin Therapy. E. Grafe.—p. 1255.
- Morbidity and Mortality in Diabetes. E. Fürth.—p. 1259.
- Traumatic Diabetes. R. Herbst.—p. 1262.
- So-Called Water Disease. H. Hornung.—p. 1264.
- \*Cutaneous Cancer After Chemical Treatment of Corn. A. W. Busse.—p. 1269.
- Ureteral Calculus and Appendicitis, Differential Diagnostic Observation. P. Dietz.—p. 1269.
- \*New Rapid Method for Early Diagnosis of Pregnancy. G. de Nito.—p. 1272.

**Cutaneous Cancer After Chemical Treatment of Corn.**—Busse cites a case in which a cutaneous cancer developed on the small toe of a man following the treatment of a corn with chemical substances. The toe was removed by exarticulation and the histologic examination of the tumor disclosed a cornifying squamous cell carcinoma. It remained doubtful whether the neoplasm was the cancerous degeneration of the corn or a cutaneous carcinoma that was elicited by chemical influences. At the time of discharge, the scar showed no sign of irritation, but there were slightly enlarged inguinal glands. Renewed examination of the patient after nine months for possible metastases revealed no changes on the foot but the inguinal glands were still palpable.

**Another Method for Early Diagnosis of Pregnancy.**—The pregnancy test suggested by de Nito is based on the fact that the intravenous injection of pregnancy urine results in changes in the number of leukocytes in the test animal. The author makes the test on rabbits. He determines the leukocyte number in the rabbit and then injects intravenously from 5 to 10 cc. of the urine that is to be examined. After from two to four minutes has passed, he again counts the number of leukocytes. If the injected urine is from a pregnant woman, a considerable reduction in the number of leukocytes is observable, whereas there are only insignificant changes if the woman is not pregnant. The phenomenon of the reduction in leukocytes was observable in all phases of pregnancy, even the early ones, so that the test is suited for the early diagnosis of pregnancy. The author performed this test in about 100 cases and obtained correct results in 90 per cent of them. He also investigated why pregnancy urine reduces the leukocytes and he calls attention to the considerable increase of blood pressure reducing substances in the urine of pregnant women and also to Abderhalden's hypothesis of the so-called protective ferments.

## Zentralblatt für Gynäkologie, Leipzig

60: 2049-2112 (Aug. 29) 1936

- Ecthiomene of Vulva as Result of Fourth Venereal Disease. H. O. Kleine.—p. 2050.  
Experiences in Combating Cancer. J. Beaufays.—p. 2056.  
Possibility of Error in Roentgenologic Diagnosis of Fracture of Humerus in the New-Born. F. A. Wahl.—p. 2061.  
\*Treatment of Menstrual Disturbances with Diathermy of Uterine Mucosa. B. S. ten Berge.—p. 2066.  
Fever and Menstrual Cycle. E. Menninger-Lerchenthal.—p. 2072.  
\*Is There a Period of Physiologic Sterility in Women? R. Araya.—p. 2074.  
Twelve Years' Experience with Tubal Insufflation by Means of Own Apparatus. R. Budimlić.—p. 2084.

**Diathermy of Uterine Mucosa in Menstrual Disturbances.**—Five years ago ten Berge started to treat uterine hemorrhages by applying diathermy to the uterine mucosa. He uses a bean-shaped button attached to an insulated rod as the pole that is introduced into the uterus. The heat of this pole rises to 50 or 60 C. The patient lies in the lithotomy position on the indifferent pole. The vulva and the vagina are cleansed and the cervix dilated to Hegar No. 6. The rod-shaped pole is introduced into the uterine cavity so that the insulated rod lies in the cervical canal. Then the current is closed and its strength is stepped up to 0.75 ampere. Now the pole is moved back and forth along the uterine wall. The duration of this treatment is two minutes. Care must be taken that the internal os is not touched for, if it is, there is danger of stenosis. Stenoses and obliterations are impossible in the uterine cavity, because only the upper layer of the mucosa is coagulated and a considerable layer of mucosa is preserved. After the treatment is over, the pole is not removed from the uterus until it has cooled. In some patients a paracervical anesthesia is required. However, in the majority of women the pain is not sufficient to require an anesthetic. The patients are kept in bed for one or two days after the treatment. The author employed this treatment in seventy-one women, thirty-four of whom were in the climacteric stage. In twenty-six (75 per cent) of the latter group the treatment was successful. The treatment can be combined with an exploratory curettage. In hemorrhages caused by endometritis, the method was successful in 55 per cent of the cases. In cases of myoma, no favorable permanent results were obtained. However, the method can be used even in these cases for the purpose of arresting the hemorrhage. Thus time is gained in which the patient can be strengthened before operation. The method involves no danger and is comparatively simple.

**Period of Physiologic Sterility in Women.**—Araya examined the validity of the theory of physiologic sterility advanced by Ogino and Knaus. He maintains that ovulation may take place at any time during the menstrual cycle and that a corpus luteum may likewise be present at any time. The existence of a pregravid stage on the part of the uterine mucosa is unnecessary for the nidation of the ovum. Observations on women who had only a single intercourse in one menstrual cycle proved that conception may take place at any time, even during menstruation. Results of artificial insemination prove likewise that it may be successful at any time in the course of the cycle. The survival of the spermatozoa within the female sex organs is sufficient to make possible the fertilization of a subsequently formed ovum. The life expectancy of the ovum is not definitely known, but it is assumed that it is at least two or three days. On the basis of these factors the author rejects the theory of a period of physiologic sterility in women.

## Wiener medizinische Wochenschrift, Vienna

86: 1157-1184 (Oct. 17) 1936

- Headaches and Their Treatment. A. Pilcz.—p. 1157.  
Progress of Therapy of Female Gonorrhea. S. Wolfram.—p. 1160.  
\*Posterior Lobe of Hypophysis and Thyroid. O. Peczenik and L. Popper.—p. 1165.  
When and How Should Pneumothorax Treatment Be Terminated? W. Neumann.—p. 1167.

**Posterior Lobe of Hypophysis and Thyroid.**—Peczenik and Popper direct attention to the fact that Pal observed two decades ago that solution of posterior pituitary exerts a favorable influence on hyperthyroidism. In order to gain a better insight into the functional antagonism between the posterior pituitary and the thyroid, the authors resorted to animal experiments. The tests were made on adult male guinea-pigs. In

order to determine whether solution of posterior pituitary has an inhibiting effect on the action of thyroxine, one group of animals was given intraperitoneal injections for ten days. Beginning with the sixth day, these animals as well as the controls (receiving no solution of posterior pituitary) were given subcutaneous injections of thyroxine. In the animals that had been treated with solution of posterior pituitary the action of the thyroxine was noticeably inhibited. The authors made other animal tests to determine the action of solution of posterior pituitary on the organism's own thyroid principle as well as on the secreting thyroid itself. They reach the conclusion that the inhibiting effect of solution of posterior pituitary has its point of attack chiefly on the peripheral organs. They admit that the therapeutic use of the solution in hyperthyroidism has the disadvantage that only a part of the cases respond to it and they think that this is the reason why this treatment has not been more widely employed. Nevertheless, one of the authors (Popper) resorted to solution of posterior pituitary in thirty-one cases and achieved improvement in twenty-two.

## Sovetskiy Vrachebnyy Zhurnal, Leningrad

Oct. 15, 1936 (No. 19) pp. 1441-1520. Partial Index

- \*Clinical and Laboratory Observations on Persons Infected with Pfeiffer's Bacillus. A. A. Smorodintsev, A. I. Drobyshskaya, S. I. Leytman, S. M. Ostrovskaya and O. I. Shishkina.—p. 1445.  
\*Etiology of Grip Epidemic of 1936. A. A. Smorodintsev, A. I. Drobyshskaya, S. M. Ostrovskaya and O. I. Shishkina.—p. 1455.  
Pneumonias of Grip Epidemic of 1936. M. D. Tushinskiy.—p. 1469.  
Procaine Hydrochloride Block in Internal Diseases. L. I. Vilenskiy and A. O. Tseytel.—p. 1479.  
Clinical Observations on Paratyphoid B. M. F. Wassermann and E. N. Rozova.—p. 1492.

**Infections with Pfeiffer's Bacillus.**—To determine the specificity of *Bacillus influenzae pfeifferi*, Smorodintsev and his co-workers made observations on 110 volunteers in whom an attempt was made to induce a direct infection. Attempts to graft the infection by placing pure cultures of the bacillus on cotton tampons in the nasal passages and rubbing the cultures at the same time into the tonsils failed. The authors then developed a method of introducing the bacilli in contact with the deeper respiratory passages by means of inhaling through an anesthetic mask into which a spray of live cultures was introduced. Most of the volunteers were hospitalized. All the 110 persons subjected to the experiment developed in from four to six hours a fairly characteristic clinical picture of a toxic infectious state. Cultures of washings from the pharynx gave a high concentration of colonies of the bacillus of Pfeiffer in the course of the following five to ten days. The incidence of the hemolytic streptococcus and the pneumococcus was not affected and remained at the same level as before the experiment. There was an increase in the blood of the specific agglutinins and the complement bodies. The clinical manifestations displayed a certain similarity and indicated a specific toxic-infectious state characterized by evanescence and rapid termination (from one to two days). Neither the subjective nor the local manifestations could be said to be characteristic of epidemic grip. All cases exhibited at the earliest moment of infection a definite leukocytosis. There was not a single case of contagion among the medical personnel or in the especially arranged experimental conditions favoring contact infection. The authors conclude that the artificially provoked infection in healthy persons by means of virulent live cultures of the bacillus of Pfeiffer is not identical with true epidemic grip.

**Etiology of Grip Epidemic of 1936.**—Smorodintsev and his collaborators separated a filtrable virus from the respiratory passages of cases of grip in the 1936 epidemic. This virus was found to be pathogenic for mice and to be identical with the virus of Smith, Andrewes and Laidlaw. The Leningrad strain on introduction into the respiratory passages of mice produced typical catarrhal manifestations and fever within twenty-four hours, and resistance to reinfection. Dilutions of the virus of 1:10,000 were fatal to mice when introduced intranasally. The virus could be neutralized by the immune serum specific for the English strain. It failed to cause infection in mice actively immunized against the English virus. The blood of convalescents from grippal infection was found regularly to contain a marked increase of virucidal elements. The serum of convalescents was capable of neutralizing 1,000 fatal doses of the virus in dilutions of 1:1,000, whereas the serum of

patients at the height of the disease could not do the same in dilutions greater than 1:10. These data support the concept of the filtrable virus as the primary cause of epidemic grip. The bacterial content of the respiratory passages in postgrippal complications showed a great increase during the first five or six days in pneumococci of the fourth type, the bacillus of Pfeiffer and *Micrococcus catarrhalis*. The study of sputum of sixty patients with grippal pneumonia showed identical qualitative characteristics with the microflora of the respiratory passages in uncomplicated cases of grip. It appears that by provoking the inflammatory processes in the respiratory passages the causative agent of grip, the filtrable virus, activates and mobilizes such microbes as the pneumococcus and the bacillus of Pfeiffer. This enormous accumulation of microbes is capable of giving rise in persons weakened by the action of virus to secondary infections; such as grippal pneumonia.

### Nederlandsch Tijdschrift voor Geneeskunde, Haarlem

SO: 4773-4872 (Oct. 24) 1936

\*Is There a Relation Between Pernicious Anemia and Gastric Cancer? D. van der Sande.—p. 4774.

\*Ileitis Terminalis. C. Knapper.—p. 4782.

Treatment of Chorea Minor with Injections of Eripan Sodium. J. J. Jüngerhans, J. J. C. P. A. Roovers.—p. 4793.

Bronchspirometry. A. Van Meeteren.—p. 4795.

Further Investigations on Experimental Catatonia. II. De Jong.—p. 4803.

Atrophy of Skeleton of Right Hand with Aspects of Sudeck's Atrophy: Two Cases. M. H. P. P. Van Haeff.—p. 4811.

**Pernicious Anemia and Gastric Cancer.**—Following a description of the clinical history of a woman, aged 73, who first suffered from pernicious anemia which was successfully treated by means of liver therapy and who, two years later, presented the symptoms of gastric cancer, van der Sande discusses the possibility of a relationship between pernicious anemia and gastric cancer. He points out that the literature reports other instances of the combination of pernicious anemia and gastric carcinoma in the same patient, but he stresses that criticism is necessary in the evaluation of these cases. He cites some of the factors that must be considered in establishing a relationship between pernicious anemia and gastric cancer. He reaches the conclusion that as yet the number of cases of concurrence of pernicious anemia and gastric cancer is still too small to permit a definite statement regarding the relationship between the two diseases. Nevertheless, he opines that it is advisable to think of the possibility of a developing gastric cancer in patients with pernicious anemia.

**Ileitis Terminalis.**—Knapper shows that this form of ileitis is an inflammatory process of the terminal portion of the ileum, which sometimes spreads to the cecum. The clinical symptoms of this disorder become understandable, if attention is paid to the fact that the disease involves three processes; namely, ulceration of the intestinal mucosa, thickening and shrinking of the intestinal wall and a tendency to form internal and external fistulas. The pathologic diagnosis is based chiefly on the exclusion of specific infective processes in the ileum. For the clinical diagnosis, the roentgenologic examination of the intestinal tract is of primary importance. The characteristics of the roentgenogram are nozzle-shaped elongation of the cecum, irregular filling of the terminal loop of the ileum and dilatation of the afferent loop. As the best method of treatment, the author recommends ileocecal resection, which can be done during the acute as well as the chronic stage. To avoid the risk of relapse, the resection should be done in the healthy tissue. In some cases, resection in two stages is advisable. The author describes two cases of his own observation.

### Hygiea, Stockholm

98: 577-608 (Sept. 15) 1936

\*So-Called Choledochus Cyst. F. Koch.—p. 577.

**So-Called Choledochus Cyst.**—Koch says that primary idiopathic dilatation of the common bile duct is a cystic distention without demonstrable obstacle, secondary dilatation being due to an obstacle to the outflow of the bile. In his first patient, a girl aged 12, with a diagnosis of organic heart defect and acute gastro-enteritis, necropsy revealed, in addition to a three-chambered heart, the choledochus immediately above the entrance into the duodenum as a thin-walled, cystlike dilatation

the size of a hen's egg. The wall was made up of sclerotic connective tissue with occasional smooth musculature and was without a sign of mucous membrane. The form of the dilatation, normal condition of the other bile ducts and absence of any anatomic hindrance in Vater's papilla testified to an idiopathic dilatation of the choledochus. There was also complete lack of the spleen, a malformation of which only about thirty instances have been reported (Ask-Upmark). His second patient was a man aged 55. On necropsy an unusually large secondary dilatation of the entire common bile duct was found, with a maximum width of 8 cm., due to a constricting tumor in the duodenal papilla; the cystic and hepatic ducts also were dilated. The wall of the choledochus consisted of sclerotic connective tissue; mucous membrane and glands were missing. Idiopathic dilatation of the choledochus, the author says, occurs about seven times as often in girls as in boys; the oldest age reported is 56, and the average age on operation 14. The choledochus cyst varies from the size of a hen's egg to that of a man's head. The clinical picture is characterized by pain, jaundice and tumor. Pain, often the first symptom, and reported in 45 per cent of eighty-four cases from the literature, appears in attacks of varying intensity and duration, usually at longer intervals, and resembles gallstone colic. Jaundice, seen in 62 per cent of the cases, is usually intermittent, may be progressive, and is accompanied by the picture of a biliary stasis. The tumor, palpated in about 60 per cent of the cases, is an elastic, sometimes fluctuating, rounded tender resistance in the right side of the epigastrium. Diagnosis before operation or necropsy has been made in but few cases. The patient's history may allow the disturbance to be traced back to childhood. The importance of the surgeon's familiarity with the anomaly is stressed. Treatment is directed to restoring the flow of the bile and causing collapse of the cyst. The operative method advised is anastomosis between the choledochus or the gallbladder and the duodenum or jejunum, done in one or two sessions. The one-session procedure is almost always a choledochoduodenostomy. According to reviews cited, the mortality in primary anastomosis is 30 per cent, in operation in two-sessions 35 per cent.

### Svenska Läkaresällskapets Handlingar, Stockholm

62: 155-233 (No. 3) 1936

\*Tuberculosis of Lymph Nodes and of Serous Membranes. E. Karlmark and K. J. Grenabo.—p. 155.

Esthiomene and Inflammatory Stricture of Rectum as Accompanying Disturbances in Inguinal Lymphogranulomatosis. W. Frei.—p. 227.

**Tuberculosis of Lymph Nodes and of Serous Membranes.**—Karlmark and Grenabo call attention to two forms of tuberculosis in older patients which they consider interesting both theoretically and practically, and they report full tabulation of the 124 cases of not healed tuberculosis of lymph nodes and of serous membranes, or tuberculosis of serous membranes and of lymph nodes in the same case, found among the 1,870 cases of tuberculosis out of a necropsy material of 5,168 cases from 1925 to 1932. The material seems to them particularly adapted for study of the question of the flare-up of tuberculosis, as of the caseous tuberculosis of the lymph nodes and the caseous tuberculosis of the lungs revealed on postmortem the former probably represents an older condition.

### Ugeskrift for Læger, Copenhagen

98: 885-914 (Sept. 17) 1936

\*Percutaneous Tuberculin-Plaster Test. Monrad.—p. 885.

Precautionary Measures in Cases of Dysentery and Salmonella Infections. K. Bojlén.—p. 887.

Roentgen Measurements of Pelvis. K. Overgaard.—p. 890.

**Percutaneous Tuberculin-Plaster Test.**—Monrad reports five cases of unspecific positive Mantoux reactions in children observed during the last six months and states that in the Queen Louise Children's Hospital the following is not the regular procedure. If in a given case the intracutaneous test, after two negative plaster tests, shows a positive reaction, a third plaster test is made. If it is positive, infection with tuberculosis is regarded as established; if it is negative the intracutaneous test is repeated, and the outcome of this compared with the results of the remaining clinical examination is accepted as determining whether or not tuberculous infection is present.

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## THE ORGANIC BACKGROUND OF THE PSYCHOSES AND NEUROSES

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Surely by its very nature neurology and psychiatry must pervade and be pervaded by all medicine.

Neurology must rest on and be supported by internal medicine and must in its turn be the base of psychiatry. We who study either must concern ourselves with the general field and, like Peter on the roof-top, call nothing in biologic thought common or unclean. In the past century, neurologists were busy collecting, classifying and, as their often unappreciative colleagues would say, "labeling" specimens of neural disorder. Now this work is largely outgrown and we have to dig below the surface of morbid phenomena to find the toxic or chemical or glandular origins of disease: often heavy and seemingly unprofitable labor, but work which is the very stuff of medicine and on which one day will be established a real pathology of mind. We need not pile up argument to show that neural change most often depends on changes in other tissues. Within the lifetime of many here, dementia paralytica, once regarded as a unitary disease—insanity—has been shown to be syphilis and nothing but syphilis; but most of the older men as students were instructed that this crumbling of a personality might come from overwork or exposure—presumably to the winds of Heaven!

When I was a house officer at the Queen Square, one of my seniors surmised that paralysis agitans was a neurosis with no organic or structural basis. We know now its cellular pathology and much of its infective origin. Asthma was once to me akin to the vapors of a still earlier day. Now we understand its allergic etiology and are beginning to sense the enormous part individual sensitiveness to specific protein may play in many cases of both organic and functional nerve disorder. So we must live in no ivory tower. We have to scour over and delve in the fields of internal medicine and also try to throw searchlights through the tenebrous fog of endocrinologic fact and fable.

However, while our vision of the so-called organic field has deepened and widened, we are still inclined to regard deviations of mental and emotional nature as disease-units in themselves. Surely the time has come to put away the notion that psychiatry deals just with mind-disease. This dualistic philosophy, this ecclesiastical view of man, is without biologic or medical support, and it has beset our minds and lamed our thoughts

for two thousand years. The notion of "space-empty" or "space-etheral" has today been abandoned and nature is now viewed as energy, patterned into worlds, patterned variously also for every stick, stone or bit of life on them. Man thus becomes one with his environment, which pervades him wholly and into which he extends himself hugely; born according to his manner, he holds his unique pattern as a momentary opportunity for experience, a stream of creative continuity with aim.

There has been a tendency among psychiatrists in the recent past to ignore this structural patterning of man, to divorce soma and psyche and to treat the mind as though it were Mohammed's coffin swung in the empyrean between earth and heaven, having neither structure nor fabric. Plotinus says that sensations are obscure thoughts; and intelligible or spiritual thoughts are clear sensations. Such unity of function and structure has been forgotten through a kind of blinkered specialism, so that a psychiatrist today has a sense of professional and social demotion should he deign to regard the bodily functions at all. Juvenal may have told him that his patient cannot cry "Evoe Bacchus" with an empty belly, but nowadays the god can be invoked with propriety only as an unconscious compensation against an incestuous passion for a maiden aunt who keeps a milk-farm.

We talk of the modern brand of psychology as an analysis. Much of this ingenious scholasticism is so far from really plumbing the depths of mental origins that it is but figure-skating on the surface of the problem. The real problem is why does a certain person have to substitute something else for his difficulty in order to relieve his difficulty? And why does another person not have to go through that complicated procedure in order to be happy? The true problem is the nature of the play of organic forces in the individual causing the stable or unstable equilibrium of his feelings and his intellect. The difference between one individual and another is here in modern psychology only described and not explained. It's not enough to go into a picture gallery and say "I understand this picture, it is by Rubens," and "That there is by Velasquez." Mere recognition. The person who recognizes those pictures enough to christen them does not necessarily understand Velasquez, nor need he have an iota of knowledge as to how Velasquez mixed either his paints or his ideas. Just as we have not an iota of knowledge of the causes of two of the great scourges of our civilization, dementia praecox and manic-depressive psychosis. To make up for our ignorance, we rechristen them each decade in different dead languages and call it progress. We must not mistake the projections and productions for the deeper causes of those projections and productions. And the cause of the projections in the last

analysis lies there in the type and quality of both brain and body. Through sixty years, my grandfather nourished the vain hope of elucidating the problem of "fever" by the study of miles of temperature charts. Lacking a somatic orientation, an orientation primary rather than secondary, the causes of fever would never have been bared; and now we know that the fever then regarded as a primary disease entity is really a beneficent and often conquering ally against a more concealed opponent. In body and brain lies the center of our impulses and the controller of the weather in our souls.

Mind is to brain and body as the function of sight is to the eye. Who would try to discover the meaning of Sight with no reference to the eye, the retina and the optic tracts, or to the ability of the cortex to gather up and differentiate impulses to it and to unify or reject them? We should, thus, know nothing of sight: lacking such consideration we would know esthetics, visual esthetics, and we would be dwelling in this too as among the Mysteries. After all, in encephalitis there came morbid behavior and morbid emotional states emerging from lesions as organic as a fractured femur and we must believe that such cases furnish precious knowledge of neurotic and psychotic happenings from a physical rather than from emotional or psychic causes.

All the specific fevers have their nervous concomitants. Is it not strange in us that a patient with pneumonia, who, harassed by delusions of imminent destruction, throws himself from a window, is classified as delirious from fever, while a similar psychic situation with no obvious intoxication may be called cyclothemia, the organic pathology of which most psychiatrists deny? One patient is said to have a disease of the body, the other a disease of the mind. This is at once loose and dogmatic thinking. Only in Wonderland can we find the grin without the cat. We must educe a pathology for neuroses and psychoses—and they are only two parts of the same spectrum—through medicine; the effort to do so through philosophy and psychology has not succeeded. These are useful till our knowledge of the body will have grown to a larger stature. In therapeutics they deal well enough at times with symptoms, but a sharper sword must today be forged by medicine to deal with the nature of mental illness itself.

Often one hears a proper plea from the psychologist for a consideration of the human animal as a whole. One can understand his meaning in that the metazoic multicellular animal functions in each act, as uniquely, in as unified a manner, as does the unicellular animal. Each act of behavior is the resultant of the forces in the organism, so that, I think, one may properly speak of the human being as acting as a whole, which, of course, is not the same as feeling or thinking as a whole.

Many have described Freud's philosophy, Freud's theories, as being a purely motivistic relation of human behavior. One feels, however, not that Freud's point of view is incorrect but that it is true only in part. It is only one angle of view. Our mind symbolizes everything we see; we see but one aspect at a time, and that, first and clearest, which appeals to the consciousness of the observer. The important thing is to try to have more than one line of attack and more than one angle of vision; but the psychoanalyst seems to see like Polyphemus with but a single eye, and one cannot but feel that there is a certain belief in his circles that they have absorbed psychiatry, that, without their rigid technic and ritual, one is not a psychiatrist, and that he

who is not for them is against them. This is on the banner of all religions but is on the banner of no science.

Fanatics have their dreams, wherein they weave  
A paradise for a sect.

It is suggested that one has no power to appraise human personality in other terms than theirs. Now Shakespeare was not a psychoanalyst, nor Voltaire, nor George Meredith, nor Thomas Hardy, but I venture to say that these men knew more of the human spirit and the motivistic phenomena that prevail in the human heart than most of Freud's disciples. The great artists, so far, have been perhaps the greatest of all psychiatrists. Their understanding may be better than our knowledge.

So, I feel the freudian contribution to be this: Freud has demonstrated that there is a phylogeny of personality. We have long known that physically each of us is a developmental microcosm of our race. From the egg to maturity we pass through stages in our body at least similar to those through which the whole race has passed. Freud, however, has made it clear that in our emotions, in our strivings, in the preponderance of this instinct over that at different periods of our lives, we have a like phylogenetic evolution—and, if we live long enough, devolution—of instinctive growth and personality; that the child is a polytheistic savage, that its sexual instincts emerge by gradual progression from a preoccupation with one orifice of its body to a preoccupation with another. Freud himself, however, has said in his last lectures that he is not sure it is a contribution to therapeutics. And, indeed, few men feel better or happier when reduced to their lowest common denominator—and some despair and are degraded when confronted by the kitchen-rebellion of their antique urges.

Nevertheless, this work does make it clear how our instincts have developed within the microcosm of each man's body. However, we have physical vestigial remnants like gill-slits, and instinctive and emotional vestigial remnants like sexual reversions and scatologic tropisms; but we'd be foolish to appraise the total body in terms of the one or the total personality in terms of the other.

Further, the assurance with which symbolistic theories are applied tends to give our thoughts and orientation away from ideas which promise much from other points of view. The work on the metabolism of brain tissue, on the chemistry of the nerve-impulse, on the rôle played by vitamins and enzymes in neural nutrition, on mood changes associated with blood sugar variation, on the significance of the temporary appearance of menopausal vaginal epithelium in young women passing through cyclic mental depressions—these notions are just appearing over our horizons. If we should tend to limit our enquiries into neurotic and psychotic behavior to any pontifical doctrine, be content with patterning and docketing of mental phenomena, with the formalism and rigidity and humorlessness of the chemical analytic tables of our student days, then I say we are deserting the spirit of medicine for Alexandrine scholasticism. We are asked to regard each human being as a single unswerving, unchanging uniformity against which environmental stimuli are directed. Should we postulate that each individual invariably reacts to these in the same way as does every other individual, and according to "the book of words,"

then we are saying something, contrary, I am sure, to human experience and to common sense.

Individuals differ as much in their personalities and reactions as in their faces. They differ, as even Freud has admitted, in their inherited endowments. Nor is inherited endowment a fixed concept. There is certainly such a thing as the inheritance of acquired characteristics. Our trouble is that we see this problem narrow and we see it short. We think in far too small units of time. We cannot see the results of inheritance of acquired characteristics because of the paltry shortness of our own lives; and, because our eyes are holden, our minds are holden also.

There is much evidence in the animal world that such transmission of acquired characteristics exists, that a defective germinal cell will produce a defective descendant and that the defective descendant will procreate a defect in his descendant. If that can happen in the lower animals it can happen to us; only our nervous systems are so complex, they are so much more evolved, that we cannot see these changes in them in terms of our little lifetimes.

All of this is far from denying the reciprocal influence of emotional stress on bodily tissue. Strain and unhappiness produce gastric ulcer. In both civil and military life, we've all seen fright produce hyperadrenalism and acute enlargement of the thyroid. Many allergic persons react to their specific protein only when their autonomic systems are, as it were, "triggered" by emotion. This shadow country where the saints dwell and where soma and psyche are wedded is perhaps the Never-Never Land of Medicine. If we should learn it enough for geography and charts, we may learn to control personality and thereby lose our humanity. However, war and the stupidity of statesmen may be depended on to destroy civilization before disaster comes to us through too much knowledge.

Of course, the pressure of sex, the pressure of hunger, the pressure of the herd, impinge on and mold, modify and direct the growing organism. A potential homosexual may be made a complete homosexual by education and experience, but I believe he must be biologically nearly a complete homosexual not to resist the normal trend of physiologic living.

If environmental stresses are the causes—as indeed most laymen believe—of mental breakdown, there would have been an epidemic of dementia praecox and manic-depressive insanity during the war, and during the depression. However, all this is far from advocating a mechanistic approach to the study of functional or "reversible" disorder. But one pleads that we employ all our physiologic knowledge as well as our knowledge of anthropology and psychology to find out the nature of the mind of man, and not limit our approach to any one arbitrary symbolistic theory. We should treat man as a dynamic and a physiologic whole.

Our attitude is more a biopsychic approach than a mechanistic approach and is an effort not to be satisfied to explain the unknown by something equally unknown. We must believe that we cannot have intellect or ecstasy without a good neuron endowment. The strategic outlines and boundaries of mind are laid down by physical heredity; its tactical plan by social inheritance, by education and by the molding pressures of sex, the herd and hunger. All may be destroyed by infection or degeneration.

As yet we can throw no light on the intrinsic nature of mind and are forced mainly to apply with some

empiricism psychologic remedies to psychologic ills. We are now only picking at the locks of doors behind which lie the answer to these mysteries. Many keys will be needed for the opening, but it surely will not be beyond man's wit to make them.

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## THE CLINICAL USE OF DIURETICS

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Diuretics are drugs used to increase the volume of urine. This presupposes the kidneys to be in such condition that the formation of urine is possible; there must be at least a certain degree of parenchymal integrity, a sufficient blood pressure and an adequate blood flow. These facts are not infrequently overlooked, and attempts are made to increase the flow of urine by diuretics when they are bound to fail. For instance, in the oliguria or anuria of surgical shock and Addison's disease, efforts to raise the blood pressure will have much more effect on urine excretion than will diuretics. In the oliguria of congestive heart failure diuretics are much more effective when the circulation has been improved by rest or by rest and digitalis. In the anuria of mercury bichloride poisoning, no diuretic will increase the excretion of urine until a certain amount of regeneration has taken place in the tubular epithelium.

Presumably, as emphasized by Peters,<sup>1</sup> diuretics do not cause either a chemical or a biologic revolution in the body but work through existing physiologic mechanisms. The formation of urine is complex, but recent work has brought a reasonable amount of agreement on the processes involved. The first is separation in the glomerulus of a normally protein free ultrafiltrate of plasma, containing all the soluble substances present in plasma, and in the same concentration. As this ultrafiltrate passes down the tubule it is concentrated by the reabsorption of water by the tubule cells and modified by the reabsorption of dextrose, sodium chloride and certain other salts and by the secretion of some dyes, such as phenolsulfonphthalein, and a certain amount of some other substances. Hence a diuretic must in general act in one of two ways. It may increase the volume of glomerular filtrate or decrease the reabsorption of water in the tubule.

A certain decreased reabsorption of water probably results from any increase in the volume of glomerular filtrate but is much more effectively produced by a high concentration of certain salts in the filtrate or by drugs, such as mercury, which inhibit the reabsorptive power of the tubular epithelium. There is little to support the conception that the chief action of any diuretic is change in the "water binding" power of the serum proteins, in spite of much discussion of the subject, especially in the German literature.<sup>2</sup>

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Read before the joint meeting of the Section on Practice of Medicine and the Section on Pharmacology and Therapeutics at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 14, 1936.

1. Peters, J. P.: *Body Water*, Springfield, Ill., C. C. Thomas, 1935.  
2. Ellinger, A.; Heymann, P., and Klein, G.: *Quellungsdruck der Eiweiskörper und Diuresis*, Arch. f. exper. Path. u. Pharmacol. 51:1 (Oct.) 1921. Nonnenbruch, W.: *Ueber die Wirkung des Novasurols auf Blut und Diuresis*, München, med. Wchnschr. 68:1282 (Oct. 7) 1921. Saxl, P., and Heilig, R.: *Ueber die Novasurolidiuresis*, Arch. f. d. ges. exper. Med. 38:94, 1923. Veil, W. H.: *Ueber die Auslösung intermediärer Kochsalzverschiebungen von Zentralnervensystem aus*, Arch. f. exper. Path. u. Pharmacol. 65:189 (Aug.) 1920.

While there are conflicting opinions in the literature concerning the mode of action of many diuretics, there is good evidence, I think, that examples can be found among those commonly used of each of the actions mentioned.<sup>3</sup>

The caffeine or rather xanthine group, shown long ago by von Schroeder<sup>4</sup> and more recently by Richards and Plant<sup>5</sup> and others to exert their action directly on the kidneys, must either increase the volume of glomerular filtrate by an increase in glomerular capillary pressure due to local vascular adjustments within the kidney or decrease tubular reabsorption. The latter was rendered unlikely by the experiments of Filehne and Biberfeld,<sup>6</sup> while the former is consistent with the work of Richards and his associates.<sup>7</sup>

Digitalis was introduced into therapeutics by Withering as a diuretic, and squill, which resembles it in action, has been used for this purpose for centuries. The consensus based on many experiments is that the diuresis from these glucosides is not due to any direct effect on the kidney but is the result of their action on the heart and circulation, with the consequent improvement in the blood flow through the kidney. They produce little or no diuresis in a normal man. These groups, then, may be thought to cause diuresis by increasing the volume of glomerular filtrate.

The diuresis produced by water, urea, sugars, neutral salts such as potassium chloride, or sodium sulfate and the "acidifying" salts such as ammonium chloride and calcium chloride is probably in part due to a temporary hydremia with dilution of plasma proteins and in part to the presence of these substances in high concentration in the glomerular filtrate interfering with tubular reabsorption. Diuresis due to diminished tubular reabsorption is best shown, however, in the action of mercurials—mild mercurous chloride and its newer substitutes merbaphen, salyrgan or mercupurin,<sup>8</sup> and substances such as chromates and uranium used experimentally but not clinically.

The diuretic action of mild mercurous chloride was apparently first recognized by Jendrassik<sup>9</sup> in 1886 and was studied experimentally by Streyer.<sup>10</sup> But the effect was uncertain and other actions were undesirable. With the introduction of merbaphen by Saxl and Heilig<sup>11</sup> in 1920 the use of mercurial diuretics has increased rapidly.

There has been much discussion of the mode of action of these mercurial diuretics, many German and a few American investigators believing the diuresis to be the result of extrarenal factors, such as change in the composition of the blood or in the water binding power of the plasma proteins. More careful and critical work, however, has shown that the diuresis is due to local

action on the kidney<sup>12</sup> and is best attributable to a decrease in the reabsorption of water in the tubules.

The continued use of merbaphen, however, was soon found to cause toxic manifestations in patients—salivation, gingivitis, colitis and proctitis. Attempts to alter the nature of the compound combined with mercury in an effort to decrease this toxicity led to the introduction of salyrgan by Brunn<sup>13</sup> in 1924. This compound was found to be at least as effective as merbaphen and less toxic<sup>14</sup> and has properly largely supplanted it. It can be given repeatedly, at intervals of a few days or a week, with continued effect and without apparent harm for a period of years.<sup>15</sup> Its disadvantages are that it is ineffective orally, that it is prone to produce venous thrombosis, and that intramuscular injections are painful. The last two can be overcome somewhat by washing out the vein with a few cubic centimeters of salt solution after the injection and by adding a local anesthetic. Recently, following the work of von Issekutz and von Vegh,<sup>16</sup> a mercurial compound which contains a cyclopentane in place of a benzene ring was introduced as novurit, known in this country as mercupurin. This contains 5 per cent theophylline, 3.5 per cent of which is stated to be in organic combination. Theoretically, the combined action of a xanthine which increases filtration and a mercurial which diminishes reabsorption should enhance the diuresis. This undoubtedly occurs in rabbits. Crawford and McDaniel<sup>17</sup> and DeGraff, Nadler and Betteman<sup>18</sup> and Herrmann believe it to be true in man as well, while Fulton and Bryan<sup>19</sup> found that, while mercupurin was an efficient diuretic, no preference could be given it over salyrgan. In my own comparison of these drugs, I chose to use them alternately in the same patients. All the patients suffered from congestive heart failure, had received full doses of digitalis and were on maintenance amounts when the drugs were given. The dose of each was 2 cc. intravenously. Salyrgan failed to produce a diuresis in three of twenty-one instances, mercupurin in three of nineteen. The average fluid intake on salyrgan days was 1,281 cc. and on mercupurin days 1,232 cc., and the average urine volume with salyrgan was 2,244 cc. and with mercupurin 2,766 cc. The difference in the mean urine volumes, 522 cc., is not statistically significant. Yet it must be said in favor of mercupurin that a net diuresis of 2,000 cc. or more resulted from its use more frequently than from salyrgan.

The use of an inorganic "acid producing" salt with a mercurial for the purpose of augmenting the diuresis was first reported by Keith, Barrier and Whelan.<sup>20</sup> In recent years the enhancing effect of such "acid pro-

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4. von Schroeder, Woldemar: Ueber die Wirkung des Caffeins als Diureticum, *Arch. f. exper. Path. u. Pharmacol.* **22**: 39 (Oct.) 1886.

5. Richards, A. N., and Plant, O. H.: Urine Formation in the Perfused Kidney, *J. Pharmacol. & Exper. Therap.* **7**: 485 (Nov.) 1915.

6. Filehne and Biberfeld: Beiträge zur Lehre von der Diurese, *Arch. f. ges. Physiol.* **95**: 439 (April) 1903.

7. Richards, A. N.: The Nature and Mode of Regulation of Glomerular Function, *Am. J. M. Sc.* **170**: 781 (Dec.) 1925. Hayman, J. M., Jr., and Starr, I.: Experiments on the Glomerular Distribution of Blood in the Mammalian Kidney, *J. Exper. Med.* **43**: 641 (Nov.) 1925.

8. Hayman, J. M., Jr.: Estimations of Afferent Arteriole and Glomerular Capillary Pressure in the Frog Kidney, *Am. J. Physiol.* **79**: 389 (Jan.) 1927.

9. Mercupurin is a mercury derivative of a methoxy allyl amide of d camphoric acid with theophylline.

10. Jendrassik, E.: Das Calomel als Diureticum, *Deutsches Arch. f. klin. Med.* **35**: 499 (April) 1886.

11. Streyer, A.: Ueber osmotische Analyse des Harns, *Beiträge zur Chem. Physiol. u. Path.* **2**: 312, 1902.

12. Saxl, P., and Heilig, R.: Ueber die diuretische Wirkung von Novasuril und andern Quecksilberinjectionen, *Wien. klin. Wchnschr.* **33**: 943 (Oct. 21) 1920.

13. Brunn, F.: Salyrgan, ein neues injizierbares Diuretikum, *Wien. klin. Wchnschr.* **37**: 901 (Sept. 11) 1924.

14. Tarr, Leonard, and Jacobson, Sheldon: Toxicity of Mersaly, *Arch. Int. Med.* **50**: 158 (July) 1932.

15. Wiseman, J. R.: The Prolonged Use of Salyrgan as a Diuretic: Report of 270 Injections in Five Years in One Case, *J. A. M. A.* **99**: 114 (July 9) 1932. Smith, Carter: The Use of Salyrgan in One Patient Over a Period of Three Years, *ibid.* **102**: 532 (Feb. 17) 1934.

16. von Issekutz, B., and von Vegh, F.: Ueber die diuretische Wirkung organischer Quecksilberverbindungen, *Arch. f. exper. Pharmacol.* **138**: 245, 1928.

17. Crawford, J. H., and McDaniel, W. S.: Some Observations on Mercurial Diuretics, *Ann. Int. Med.* **8**: 1266 (April) 1935.

18. DeGraff, A. C.; Nadler, J. E., and Betteman, R. C.: A Study of the Diuretic Effect on Mercupurin in Man, *Am. J. M. Sc.* **191**: 526 (April) 1936.

19. Fulton, M. N., and Bryan, A. H.: Some Observations on the Comparative Effectiveness of Mercurial Diuretics With and Without Theophylline, *J. Lab. & Clin. Med.* **20**: 1252 (Sept.) 1935.

12. Schmitz,<sup>3</sup> Govaerts, P.: L'action diuretique du novasuril, *Arch. internat. de pharmacodyn. et de therap.* **36**: 99, 1929.

13. Brunn, F.: Salyrgan, ein neues injizierbares Diuretikum, *Wien. klin. Wchnschr.* **37**: 901 (Sept. 11) 1924.

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19. Fulton, M. N., and Bryan, A. H.: Some Observations on the Comparative Effectiveness of Mercurial Diuretics With and Without Theophylline, *J. Lab. & Clin. Med.* **20**: 1252 (Sept.) 1935.

20. Keith, N. M.; Barrier, C. W., and Whelan, Mary: The Diuretic Action of Ammonium Chloride and Novasuril in Cases of Nephritis with Edema, *J. A. M. A.* **85**: 799 (Sept. 12) 1925.

ducing salts" has been repeatedly confirmed. Explanations, however, of the mechanism by which these salts affect the diuretic action are still at variance. Keith and Whelan<sup>21</sup> suggested that an abnormal acid reaction in the tissues was responsible. Others<sup>22</sup> believe that only those salts which caused a fall in the alkali reserve of the blood augment the diuresis, but their results have not always been consistent.

In a series of very careful experiments on dogs, Ethridge, Myers and Fulton<sup>23</sup> found that salyrgan diuresis was enhanced by acidifying salts (ammonium

degree of acidosis was greater on the second or third day of administration than subsequently, even when the drug was taken continuously. These salts should therefore be given intermittently. Such a program of salt for two days before and on the day the mercurial is given has been used by Saxl and Erlsbacher.<sup>26</sup> In many of the cases in our series these salts were without effect because given in inadequate doses, larger amounts not being tolerated. We have been unable to detect results from less than 6 to 10 Gm. of ammonium chloride daily. If a patient cannot take these quantities, there seems no gain in annoying him with smaller doses. While the salts alone will give a diuresis when given in adequate amounts, in my experience this is uniformly less than that produced by the mercurials alone or mercurials with the salts, and the uncertain result is outweighed by the disadvantages.

Now the most advantageous diuretic to use will depend on the condition of the kidneys and which of the foregoing processes, filtration or reabsorption, can be varied to the greatest degree.

The records of 213 patients with edema who were admitted to the Lakeside Hospital during the past eight years were studied in an effort to assay the value of diuretics. These patients were treated in the wards of a general hospital by a number of men. This has given us the opportunity to compare the results of the routine use of certain drugs with what may be accomplished by the same remedies under the more rigid conditions of special study. Those drugs which most regularly produce an effect, with the least discomfort to the patient and the least attention to special details, are the most valuable. The cases that have been reviewed were divided as shown in table 1. Table 2 shows the relative effectiveness of the more common diuretics in the different groups. An increase of 500 cc. or more in urine volume above the control level has been regarded as a diuresis. The degree of diuresis

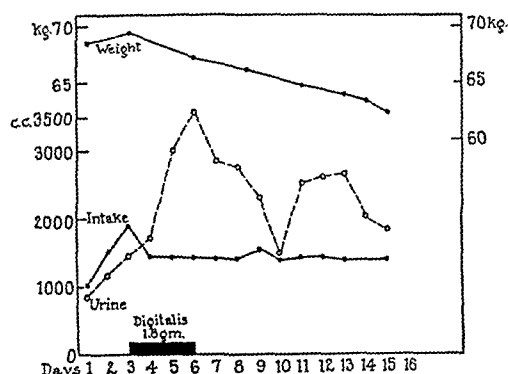


Chart 1.—The diuretic effect of digitalis in congestive heart failure.

chloride, calcium chloride, ammonium nitrate, calcium nitrate) which caused a fall in plasma carbon dioxide. Three alkalinizing salts (potassium acetate, potassium bicarbonate, sodium bicarbonate) increased the plasma carbon dioxide and very definitely decreased the salyrgan diuresis. Sodium and potassium chloride had no appreciable effect. The differences in effect of these salts showed no apparent relation to changes in the level of whole blood chlorides. Blumgart<sup>24</sup> found that salyrgan diuresis was accompanied by a fall in plasma chlorides and a rise in carbon dioxide, which was prevented if an "acidifying" salt was given. It may be that the fall in chloride and rise in carbon dioxide following salyrgan acts in the nature of a brake on the diuresis and that the salts act by removing this brake. Often the diuresis from salt and salyrgan is a true synergism, the result being much greater than the sum of the two alone.

There are certain factors, however, that make the routine use of acidifying salts of less value clinically than might be supposed. They are all irritant to the stomach and if they produce vomiting not only disturb the patient but may lead to a relative alkalosis, which is known to diminish diuresis. If they are to be used at all they must be given in large doses, from 6 to 10 Gm. daily, for if they do not give a fall in plasma carbon dioxide they are of no value. They should be administered so as to afford their maximal acidifying effect during the time of action of the mercurial. The work of Dennig, Dill and Talbott<sup>25</sup> showed that the

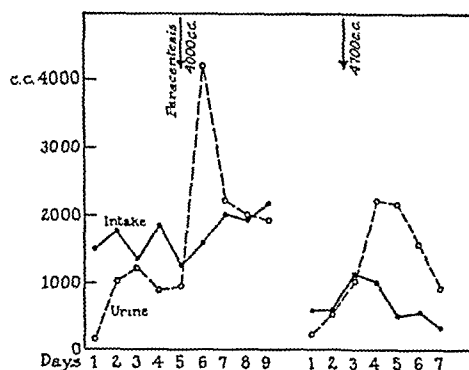


Chart 2.—Increase in urine volume after paracentesis, as the result of the decrease in pressure on renal veins. Both patients had congestive heart failure and had received full doses of digitalis.

varied greatly. In many cases of congestive heart failure, digitalis in full doses led to as marked a diuresis as any other drug. When effective, the mercurials and urea usually produced larger urine volumes than the caffeine group, salts or sugars.

In the edema of acute nephritis, the major element is a general increase in capillary permeability throughout the body. At the same time, the capillary endothelium of the glomerular tufts is swollen, so that blood flow through the kidney is diminished. This can be

21. Keith, N. M., and Whelan, Mary: A Study of the Action of Ammonium Chloride and Organic Mercury Compounds, *J. Clin. Investigation* 3: 149 (Oct.) 1926.

22. Binger, M. W., and Keith, N. M.: The Effect of Diuretics in Different Types of Edema, *J. A. M. A.* 101: 2009 (Dec. 23) 1923.

Engel, K., and Epstein, T.: Wie wirkt das Salyrgan, *Ergebn. d. inn. Med. u. Kinderh.* 40: 256, 1931.

23. Ethridge, C. B., Myers, D. B., and Fulton, M. N.: The Modifying Effect of Various Inorganic Salts on the Diuretic Action of Salyrgan, in *Medical Papers Dedicated to Henry Asbury Christian*, Baltimore, Waverly Press, Inc., 1936, p. 223.

24. Blumgart, H.; Gilligan, D. R., and Volk, M. C.: Action of Diuretic Drugs, in *Medical Papers dedicated to Henry Asbury Christian*, p. 191.

25. Dennig, H.; Dill, D. B., and Talbott, J. H.: Bilanzuntersuchung einer Salmiakazidose, *Arch. f. exper. Path. u. Pharmacol.* 144: 297, 1929.

26. Saxl, P., and Erlsbacher, O.: Ueber die Verstärkung der Natriumchlorid (Salyrgan) Diurese durch Ammoniumchlorid, *Wien. klin. Wchnschr.* 42: 36 (Jan. 10) 1929.

inferred from histologic sections<sup>27</sup> and is supported by perfusion experiments.<sup>28</sup> Here, as pointed out years ago by Christian,<sup>29</sup> diuretics have little place. They cannot be effective until the endothelial swelling has diminished, and they may do harm. All our patients with acute nephritis, with edema graded from 1 to 3 plus, were placed on a low salt diet with restricted fluids. In ten of the sixteen no diuretics were used. In the other six, xanthine derivatives, "acid" producing salts and hypertonic dextrose were exhibited with uniform failure. If increase in water intake, the blandest diuretic, is not followed by an increased volume of urine, no more powerful drug is likely to be effective.

In subacute or chronic glomerulonephritis with edema, unless of the "nephrotic" type, diuretics are again of little value. Digitalis should be given if there is any evidence of myocardial insufficiency. When it does produce a diuresis, it may be assumed that the edema is at least in part cardiac. There is no basis for the fear that digitalis may increase the hypertension. Feil and Steuer<sup>30</sup> have shown that the dosage is not affected by renal insufficiency. In the presence of impaired concentrating power of the kidneys, the mercurials are not only ineffective but are dangerous because of the likelihood of retention and mercurialism. Occasionally one of the xanthines will give a satisfactory diuresis. Keith and Binger<sup>31</sup> have reported favorable results from potassium nitrate in doses of 12 Gm. daily. In my experience the diuresis has not been marked. If diuresis is not produced in a few days, potassium salts should not be continued because of the danger of toxicity from marked accumulation of potassium in the plasma.

It is in congestive heart failure that diuretics have their greatest field of usefulness. But even here

with 1 or 2 plus edema, simple rest in bed led to a prompt diuresis and loss of all edema. In twenty-nine others, digitalis alone was all that was necessary. It gave a definite diuresis in 85 per cent of the cases in which it was used. The importance of mechanical interference with the circulation by ascites or hydrothorax must not be overlooked.<sup>32</sup> Frequently an abdominal paracentesis, and occasionally a thoracentesis, results in a marked improvement in excretion of urine. All diuretics will be more effective after mechanical removal of any large accumulations of fluid. After maximum improvement by rest and digitalis, with reasonably sound kidneys and adequate blood flow, diuretics that diminish reabsorption are usually most effective, notably the mercurials. They provoke the greatest diuresis and with the most regularity.

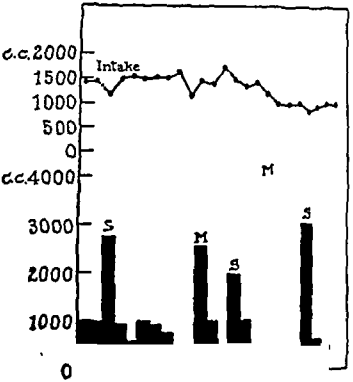


Chart 3.—The diuresis from mercurials in congestive heart failure: S, salyrgan 2 cc. intravenously; M, mercurpurin 2 cc. intravenously.

The xanthines usually produce some diuresis in congestive heart failure but of lesser degree than the mercurials. They have the advantage of being as effective by mouth as intravenously. They must, however, be given intermittently, for if administration is continued an initial diuresis quickly falls to the control level. By omitting the drug for a few days, or even a day, another diuresis can be produced. Theophylline is usually the most effective, theobromine next and caffeine least. The degree of gastric irritation is in the reverse order. Is there any evidence that aminophylline or theocalcin are better than theophylline? They apparently are less likely to upset the stomach.

Urea is another extremely useful diuretic, when there is no elevation of blood urea nitrogen, which has not come into common use.<sup>33</sup> It is readily soluble in water and if administered after a meal is unlikely to cause nausea. We have used doses of from 15 to 60 Gm. daily for from three to five days. The drug is then omitted for a few days and the course repeated if necessary. It gave a good diuresis in 83 per cent of the cases in which it was used. We have observed no toxic symptoms from its use, perhaps because it has been given intermittently, and because we have not used it in any cases in which the blood urea nitrogen was above 20 mg. per hundred cubic centimeters. Crawford and McIntosh<sup>34</sup> found that, with continued administration loss of appetite, nausea and vomiting occurred when the blood nitrogen rose to 70 mg. per hundred cubic centimeters. If it is kept below 45 mg., symptoms do not seem to occur.

Other diuretics, such as potassium salts, parathyroid and thyroid extracts, intravenous succrose, and a cottage cheese diet have occasionally been used. But our data are too meager to discuss.

TABLE 1.—Cases Classified According to Diagnosis

	Number of Cases	Age Range, Years	Mean Age, Years
Acute nephritis.....	16	8-46	22.5
Subacute and chronic glomerulonephritis with edema.....	32	15-63	38.5
"Lipoid nephrosis".....	18	15-63	36.1
Portal cirrhosis.....	30	30-69	46.8
Congestive heart failure.....	117	25-60	46.2

TABLE 2.—Effectiveness of Diuretics: Percentage of Cases in Which Drugs Were Used Showing Diuresis

	Digitalis	Caffeine Group	"Acid" Salts	Mercurials	Hypertonic Dextrose	Urea
Acute nephritis.....	..	0	0	..	0	..
Subacute and chronic glomerulonephritis.....	33	26	25	..	18	..
"Lipoid nephrosis".....	0	23	43	50	..	75
Portal cirrhosis.....	0	23	33	95	20	75
Congestive heart failure.....	85	66	53	92	0	83

increase in renal blood flow by rest, or rest and digitalis, is often all that is necessary. Other diuretics are indicated only when these fail. In three of our patients

27. McGregor, L.: The Cytological Changes Occurring in the Glomerulus of Clinical Glomerulonephritis, *Am. J. Path.* 5: 559 (Nov.) 1929.  
28. Hayman, J. M., Jr.: Experiments on the Patency of the Blood Vessels of Nephritic Kidneys, *J. Clin. Investigation* 8: 89 (Dec.) 1929.  
29. Christian, H. A.: Some Studies of a Diuretic, *Arch. Int. Med.* 18: 606 (Nov.) 1916.  
30. Feil, H., and Steuer, L.: Digitalis Tolerance in Patients Suffering from Renal Insufficiency, *Am. Heart J.* 4: 661 (Aug.) 1929.  
31. Keith, N. M., and Binger, M. W.: Diuretic Action of Potassium Salts, *J. A. M. A.* 105: 1584 (Nov. 16) 1935.

32. Schmidt, C. F., and Thorington, J. M.: Study of Urinary Output and Blood Pressure Changes Resulting in Experimental Ascites, *Am. J. M. Sc.* 165: 880 (June) 1923.  
33. Miller, H. R., and Feldman, A.: The Prolonged Use of Massive Doses of Urea in Cardiac Dropsy, *Arch. Int. Med.* 49: 964 (June) 1932.  
34. Crawford, J. H., and McIntosh, J. F.: The Use of Urea as a Diuretic in Advanced Heart Failure, *Arch. Int. Med.* 46: 530 (Oct.) 1925.

In the edema accompanying the "nephrotic syndrome" and associated with massive albuminuria, low plasma proteins, normal blood nitrogen and high cholesterol, the prolonged use of diuretics is usually attempted. All will produce some diuresis at times. In the belief that the disease was metabolic, Epstein<sup>35</sup> proposed the use of thyroid extract and reported favorable results. While the basal metabolic rate was below normal in the majority of our patients, in only nine was it below —15 per cent. Thyroid extract, even in large doses, was effective in only 25 per cent of our cases. Caffeine derivatives are either ineffective or give only a slight transient diuresis. Potassium salts in some cases give a marked increase in urine volume. We have had more uniform success, however, with ammonium chloride and salyrgan, and with urea. When the urine is of high specific gravity, indicating a normal reabsorptive power of the tubules, in spite of their abnormal histologic appearance, albuminuria is not a contraindication to the use of mercury. If a diuresis is not produced, however, it should be used with extreme caution, for there is always a potential danger, which is indicated in the uniform increase in the number of urinary casts excreted after its use.<sup>36</sup> Urea, on the other hand, has been equally effective and we have observed no toxic effects. The mechanism of its action is not clear. It is a vasodilator and so may increase glomerular capillary pressure. It is not actively absorbed by the tubular epithelium and so may interfere with the reabsorption of water in the tubules.<sup>37</sup>

In portal cirrhosis, diuretics are commonly given in the hope of preventing the necessity of tapping, or at least of diminishing its frequency. Their value, however, is questionable. The older clinicians believed in early tapping and that diuretics were a waste of time. With the introduction of the mercurials, a new impetus

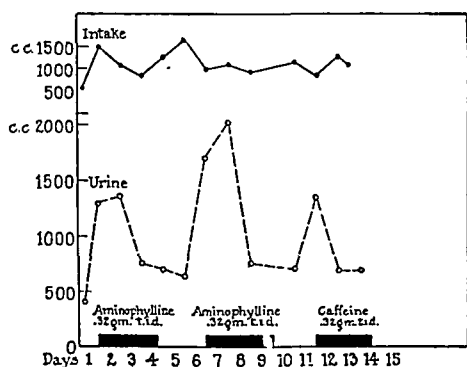


Chart 4.—The caffeine group must be given intermittently, for the diuresis fails after two or three days, even if the drug is continued.

has been given to their use. Favorable results have been reported from the Mayo Clinic<sup>38</sup> in a large group of cases. Fulton,<sup>39</sup> on the other hand, reported thirty-seven cases from the Peter Bent Brigham Hospital

presenting cirrhosis and ascites in which mercurials alone were found to be quite inadequate for relief of the ascites.

Our experience is in accord with this. In only one patient with ascites, and that of moderate amount, was sufficient diuresis obtained to make tapping unnecessary. In our experience the mercurials and urea are the only diuretics that produce sufficient diuresis and with enough regularity to justify their use, and of the two

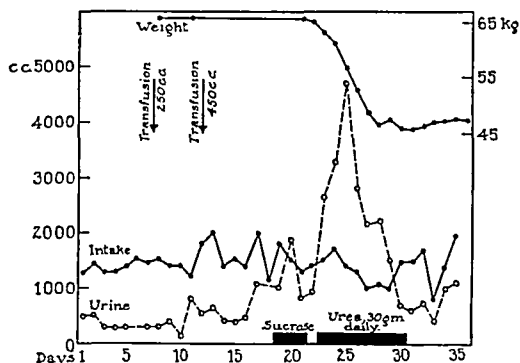


Chart 5.—Diuretic effect of urea in "nephrotic syndrome."

the mercurials are the more effective. While it is difficult to prove, since the necessity for paracentesis varies with the progress of the disease, I have the distinct impression that the regular use of mercurial diuretics has prolonged the intervals between tapings in ambulant patients.

#### SUMMARY

Diuretic drugs should be regarded only as adjuvants to other methods of treatment in the removal of edema. There must be an adequate renal blood flow and a certain degree of parenchymal integrity in the kidney for them to be effective. They have no value in acute nephritis and rarely in chronic glomerular nephritis. Diuretics have their greatest usefulness in congestive heart failure, after the patient has been digitalized. Here the mercurials salyrgan and mercupurin are the most regularly effective. In portal cirrhosis with ascites, while diuretics have not prevented the necessity of tapping, the regular use of these mercurials has in my experience lessened its frequency. Patients with "nephrotic" edema have responded more regularly to ammonium chloride and salyrgan or to urea than to any other diuretics.

2065 Adelbert Road.

**A Pint of Beer and an Ounce of Fat.**—Physical exercise was obviously intended by Nature to be the chief means of countering a surplus food intake. Suppose that the sedentary worker's expenditure of energy is about 2,370 calories per day. If he spends his leisure time in walking, he will need an additional 57 calories per mile; half a pint of mild ale will provide him with that amount of energy twice over. If he does not expend it, it will be transformed into fat. Theoretically, one ounce of human fat can be formed in the body from an average pint of beer, probably not directly but by "sparing" other fuel foodstuffs. The beer drinker who has a predisposition to obesity must reduce his consumption of other carbohydrate foods, e. g., bread, if he wishes to keep his figure normal, or else take exercise in proportion to the total calory value of his day's rations. The obese patient living on a reducing diet need not give up his glass of beer, provided that its calory value is calculated into his dietary scheme.—Christie, W. F.: *The Nutritive Value of British Beers, Practitioner* 137:760 (Nov.) 1936.

35. Epstein, A. A.: Further Observations on the Nature and Treatment of Chronic Nephrosis, *Am. J. M. Sc.* 163:167 (Feb.) 1922.

36. Brown, C. L., and Englebach: Effect of Mercurial Diuretics on the Kidney as Determined by the Urinary Cast Count, in *Medical Papers Dedicated to Henry Asbury Christian*, p. 239.

37. Cushny, A. R.: *The Secretion of the Urine*, ed. 2, London, Longmans, Green & Co., 1926, p. 193.

38. Rowntree, L. G.; Keith, N. M., and Barrier, C. W.: Novasurol in the Treatment of Ascites in Hepatic Disease, *J. A. M. A.* 85:1187 (Oct. 17) 1925. Chajman, C. B.; Snell, A. M., and Rowntree, L. G.: Decompensated Portal Cirrhosis: A Report of 112 Cases, *J. A. M. A.* 97:237 (July 25) 1931.

39. Fulton, M. N.: Some Observations on the Use of Mercurial Diuretics in the Treatment of Ascites of Cirrhosis of the Liver, *Medical Papers Dedicated to Henry Asbury Christian*, p. 247.

## THE VALUE OF FEVER THERAPY FOR GONORRHEA

C. A. OWENS, M.D.

OMAHA

My purpose in this report is to present the results obtained by treating 100 patients having gonococcal infection by artificial fever. Physically produced fever in the management of gonorrhea is not to be regarded as just another treatment method to be added to the countless ones in which all physicians have been disappointed, for the results to be described can be and are being duplicated by others. It will not be claimed that gonorrhea is now any more curable than it formerly was, because the older methods, with sensible application and faithful cooperation on the part of the patient, generally resulted in cure; but great patience and perseverance was often necessary, and serious complications often occurred somewhere along the tedious course of the disease. Too frequently both patient and doctor became discouraged or careless before a cure was accomplished.

Fever therapy now offers immediate symptomatic relief and cure in such a great majority of cases that the patient may actually be promised such relief where formerly no prognosis whatever could be given.

### RATIONALE OF THE TREATMENT

Whether the gonococcus is killed in the tissues solely through the effect of temperature maintained for several hours in the neighborhood of 106.5 F. is not definitely proved. The clinical effect of such exhibitions of artificial fever on gonococcal disease furnishes weighty evidence in support of the assumption that this is true. Two previous articles by Desjardins, Stuhler and Popp<sup>1</sup> thoroughly review the literature relative to the cultural behavior of the gonococcus under various physical conditions. Careful bacteriologic studies by others<sup>2</sup> seem to show that 99 per cent of laboratory gonococci can be destroyed while growing in ideal surroundings by exposing them to temperatures of 41 C. (105.8 F.) for five hours. The thermal death time of organisms *in vitro* must logically be different from what it is *in vivo*, and until it becomes possible to recognize and measure the antigenic factors present in the host's tissues, one cannot know whether gonococci occurring as guests in the urethral glands are more or less resistant to heat than those growing in test tubes. Likewise nothing as yet is known concerning the effect of high temperatures on tissue resistance. The exact manner in which the beneficent influence of externally induced fever is exerted is no better understood than the influence of fever resulting from injections of foreign protein. These two types of artificially induced fever have marked differences, however, in that one is biochemical and toxic in its action while the other is physical. Moreover, the one is shocklike in its sudden appearance, rapid rise to a peak and just as rapid fall, whereas the other can be maintained constant at a high level until the desired time of exhibition has elapsed. It is the

accuracy of control for both degree and duration of temperature in the new method that has made possible the remarkable results.

### OBJECTIONS TO THE TREATMENT

After a fairly extensive and pleasant experience with a therapeutic method, one is liable to minimize specific objections that appear to others to be of alarming proportions. I will try to be unbiased. Although I think I know the effect of heat on the micro-organism, I do not know the exact effect of such continuous high temperature on all the vital processes of the patient. The observable reactions of the body to vigorous prolonged heating, such as changes in cardiac function and in blood pressure, can be described in detail, but one does not rest assured that these indicators tell the entire story of nature's response to this therapy. However, the fact that one does not understand all the influences at work in a useful therapeutic measure should not mitigate one's enthusiasm in its use unless it can be shown that the method is dangerous, and such danger has not been proved by any manifestations other than minor complications herein described. Aside from the actual discomfort to the patient, the use of temperatures



Fig. 1.—The Kettering hypertherm with patient in place.

reaching 107 F. is alarming to the doctor who feels that one more degree of elevation for even a few minutes would be almost certainly fatal. There is no real answer to this objectionable feature, and it weighs so heavily with medical men that it is now and probably will remain for some time the chief obstacle to the extensive use of the treatment. The danger of overheating makes necessary the utmost exactitude of design and control of the mechanical equipment and the most meticulous care on the part of specially trained attendants. Under these circumstances, the method can never be carelessly employed as a routine or office type of treatment. It is strictly a hospital procedure for selected cases. An answer to the overcautious among the profession is the fact that in this group of cases there have been no serious complications from overheating. The procedure does appear heroic to those unfamiliar with it, and the objection is sometimes offered that this is a form of therapy the severity of which is all out of proportion to the dangers of the disease being treated. I can do nothing but grant all this and say that no permanent ill effects of the treatment have been seen, and that the majority of intelligent patients voice no regret that they have had the experience.

From the Departments of Urology and Fever Therapy Research, University of Nebraska College of Medicine.

Read before the Section on Urology at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 14, 1936.

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2. Carpenter, C. M.; Boak, Ruth A.; Mucci, L. A., and Warren, S. L.: *Studies on the Physiological Effects of Fever Temperatures*, J. Lab. & Clin. Med. 18: 981-990 (July) 1933.

## EQUIPMENT

Since the work being done at the Clarkson Hospital in Omaha is part of a research project initiated by Dr. Walter M. Simpson of the Miami Valley Hospital in Dayton, Ohio, there is the same physical equipment and general conduct by personnel at this clinic as in the others taking part in the same project. The cabinet is the Kettering hypertherm,<sup>3</sup> which combines the features of simplicity of operation with dependability and absolute accuracy of control. It accomplishes the raising of the patient's temperature to the desired degree solely through the means of recirculated hot moist air. There are no electrodes in contact with the patient and no jacket or restraint of any kind is necessary. The patient lies entirely within the cabinet with only his head outside, but the attendant has ready access to the entire body surface through large sliding doors in each side of the cabinet, these making easy the constant attention to the skin and the frequent taking of rectal temperatures.

## CONTRAINDICATIONS

Aside from the debatable objections to this form of therapy, there are some definite contraindications and these are essentially the same as those for nonspecific protein therapy. In brief, they are advanced vascular and renal changes, cardiac weakness, chronic debilitating diseases, chronic alcoholism, and marked nervous and emotional instability. It is to be noted, however, that such conditions, with the exception of alcoholism, are not commonly associated in patients who contract gonococcal infections.

## THE PROCEDURE

After general examination of the patient has demonstrated no marked renal or vascular disability, he is instructed to drink excessive quantities of water and milk the day before he is to enter the cabinet. The morning of treatment he appears without breakfast and is placed in the previously warmed cabinet. Temperature and blood pressure readings are recorded, the extremities are encased in cotton blankets to protect the skin, which shows more tendency to react unfavorably here than on the torso, and the cabinet is closed with a sponge-rubber contact reinforced by a loose towel acting to stop the free space about the neck. A cold moist cloth covers the forehead, and the breeze from an electric fan is directed on the face. Pentobarbital sodium,  $1\frac{1}{2}$  grains (0.1 Gm.), is given as a sedative just before starting the treatment. Temperature rises with a rapidity varying slightly with the individual, and the average time required for it to reach  $41.4^{\circ}\text{C}$ . ( $106.5^{\circ}\text{F}$ .) is between sixty and ninety minutes. It is during this time of temperature rise that most patients experience some difficulty. How troublesome this period of apprehension or excitement becomes depends almost entirely on the mental caliber of the patient. If he is a forceful type, determined to secure the benefit he desires and able to exert self-discipline, he will go through it nicely. The average patient is very cooperative and, after the temperature reaches a stationary level, many go to sleep for long periods. Some will require sedatives to allay their restlessness and for this purpose a hypodermic injection of one-third grain (0.02 Gm.) of Pantopon is usually sufficient. As the treatment progresses the average patient perspires

freely, and since the loss of chlorides must be prevented, he is encouraged to take large quantities of cold physiologic solution of sodium chloride. There is generally no objection to the salt solution, but when there is distaste for it, other drinks such as plain water or carbonated beverages are used freely.

Frequent observations of the condition of the skin are made through doors of the cabinet. The position of the patient may be changed from the supine to the prone, and the wrappings protecting the extremities are frequently removed and replaced. Areas of excessive erythema may be painted with tincture of benzoin, rubbed with pieces of ice or bathed with liquid petrolatum. By constant attention to such details the attendants may prevent serious burns, but at temperatures ample for gonococcal therapy minor blisters or first degree burns are common enough so that the patient is always warned concerning them. One small second degree burn has occurred.

The temperature is not allowed to go above  $107^{\circ}\text{F}$ . If it appears that the temperature will exceed  $107.2^{\circ}$ , an immediate sponge bath is given, and if a patient is

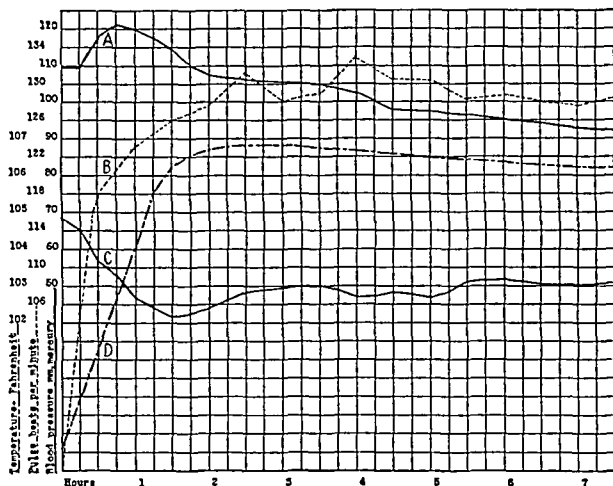


Fig. 2.—Average systolic and diastolic pressure, with temperature and pulse rate, compiled from the records of thirty-six treatments given fourteen men between the ages of 22 and 42. A, systolic pressure; B, pulse beats; C, diastolic pressure; D, temperature.

found to tolerate treatment badly as indicated at any time by extremely rapid or erotic pulse, he is taken out immediately. A well tolerated initial treatment is no proof that the patient will have more or less tolerance in subsequent sessions with the exception that it is an indication of how the skin will tolerate the heat. There can be no relaxation of vigilance by attendants alert to note the least sign of trouble at any time during any session.

Nausea and vomiting during a treatment will occur if food has been taken against orders. Occasionally patients vomit in spite of fasting and require the use of from 500 to 1,000 cc. of 10 per cent dextrose in physiologic solution of sodium chloride intravenously to control it. When nausea occurs after the treatment, either immediately or the day following, gastric lavage will generally give relief. In a few, additional intravenous fluids have been necessary after leaving the cabinet.

After completion of the required number of hours, the sliding bed is pulled out of the cabinet and the patient, protected by blankets, is allowed to cool. Generally about one hour is required for the temperature to return to normal. He is then allowed to walk if

3. The recent progress in artificial fever therapy could not be possible without this cabinet, which represents an excellent engineering service rendered by the Research Laboratories of the Frigidaire Division of General Motors Corporation and made available through the courtesy of Mr. C. F. Kettering.

is analogous to surgical procedure or, in other words, that the patient must be a surgical risk before fever therapy can be prescribed safely. The great danger of publicizing the successful institutional treatment of gonorrhea with fever therapy lies in the fact that others will attempt to make it an office procedure. I have had a fever therapy apparatus in my office for two years. I believe I know its dangers and its limitations. I have not cured a case of gonorrhea with it nor have I killed any one. However, there have been tragedies in my own state due to this type of treatment. One physician who purchased an instrument similar to mine could not be here today to tell you how he killed a man with a temperature of only 105 F. while treating him for gonorrheal urethritis. One physician here today has intimated that, if the patient wishes to assume the responsibility, fever therapy may be given for gonococcal infections. With this I differ emphatically. A physician does not have the right to allow a patient to take this responsibility in most cases. For the treatment of certain complications, such as gonococcal arthritis and gonorrheal ophthalmia, fever therapy is a most necessary addition to our armamentarium. However, in alleviating these complications one does not necessarily have to give the extreme temperatures that have been mentioned here today. Another point that should be emphasized is that the thermal death point of the gonococcus is only one-half degree Fahrenheit below the average thermal death point of man. The difference in these thermal death points is too small to allow fever therapy to be used as a treatment for gonorrhea.

DR. O. A. NELSON, Seattle: Recently I listened to a review of the records of 300 patients treated by pyrexia at the Puget Sound Naval Hospital at Bremerton, Wash., where this work is under the direction of Lieutenant Commander Potter. He stated that his results are satisfactory in the acute gonococcal infection of the urethra, prostate, seminal vesicles or joints. He contended further that although the gonococcus was killed by these treatments in the chronic stages of posterior urethritis the pus organisms persisted, so that clinically the patients were not materially improved. Consequently I am rather astonished to hear Dr. Ormond say that he is getting satisfactory results in cases of chronic gonorrhea. At the Swedish Hospital, Seattle, about thirty patients have been treated by this method for gonorrhea. One death occurred at this institution. The patient was a woman, aged 32, who went into shock in her initial treatment when the temperature reached 105.5. Although treatment for shock, such as infusion of saline solution and dextrose and blood transfusion, was promptly instituted, she died within twenty-four hours after the onset of shock. I believe that the preparation of the patient is important and that the patient should be given a high carbohydrate diet before the treatment is begun, for it has been found that in some instances the blood sugar has been reduced by a single treatment from normal value to 48 mg. per hundred cubic centimeters of blood.

DR. HERMAN L. KRETSCHMER, Chicago: There are several points that Dr. Owens should emphasize when he closes the discussion; he should emphasize again the fact that this form of treatment is used only in carefully selected cases and in cases that are carefully supervised. It is not used when certain definite contraindications are presented. It might be well to call attention to the fact that the treatments are discontinued immediately when there is a drop in systolic blood pressure and when the pulse rate rises above 160. This is a new form of treatment and I believe it is well to emphasize its limitations, its contraindications and its dangers. The wave of enthusiasm for any mechanical device is always great. It is because of this wave of enthusiasm that it is well to call attention to the possible dangers with this form of treatment. In the few cases in which my associates and I have used it, the results were nothing short of spectacular and this has been the experience of others. I agree with most of the speakers to the effect that gonorrheal infection occurs in young people who are in the prime of life and who suffer from a disease that has practically no mortality; therefore it seems to me that a death from this form of treatment is a very high price for treatment.

DR. C. A. OWENS, Omaha: Dr. Kretschmer has already emphasized most of what I wished to add. Dr. Stuhler has called attention to a fact not previously mentioned and that is the increased effectiveness of local treatments carried out in the office following partial fever therapy. My experience has

been similar to his. My figures show 24 per cent of patients who refused to continue, but I have been agreeably surprised in most instances to find these cases clearing up much more rapidly with routine office treatment than they might have done if they had not had some artificial fever. I have been cautious about giving treatments of longer than six hours' duration, feeling that such prolonged heating might be unduly dangerous. I confess I am not the most enthusiastic member of the group at Omaha, but being the urologist I have been involved as an observer of results. I am enthusiastic, but not to the degree of being ready to submit all types of patients to this form of treatment. Dr. Warren stated that from 60 to 80 per cent of gonococcal infections will get well of their own accord. If that statement is taken seriously it will help account for the good results reported for many so-called remedies for gonorrhea and it will also help to restrain the tendency to use a rather heroic treatment too freely. Dr. Ormond mentioned the use of multiple treatments. I am beginning to feel that if a marked improvement does not occur after one or two full treatments of six hours each there is no justification for further treatments. I am so respectful of the severity of this procedure that I do not urge any one to continue unless definite evidence of improvement appears after two sessions of fever. The laboratory aspect is being ably cared for and we, as clinicians, should be interested enough to give a thorough and careful trial to any procedure appearing to merit such a trial. Certainly, fever therapy has demonstrated such a merit.

## THE PHENOMENON OF LOCAL TISSUE REACTIVITY TO BACTERIAL FILTRATES

THE RÔLE OF ALTERED VASCULAR RESPONSE  
IN CERTAIN HUMAN DISEASES

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The phenomenon of local tissue reactivity deals with a new category of antigenic toxic principles from a great variety of pathogenic micro-organisms. Their physicochemical and immunologic properties are similar to those of true exotoxins. These principles are soluble and filtrable and may partially lose their potency or disappear altogether from the once highly potent filtrate. They are not dialyzable and are inactivated by ultraviolet radiation. The most important feature is that the principles are antigenic and neutralizable by specific immune serum according to the law of multiple proportions. The important distinction between the toxic principles of the phenomenon and true exotoxins lies in the mechanism of their effect. True toxins produce direct injury following a single injection. The active principles of the phenomenon elicit a state of tissue reactivity. If the principles are introduced into the blood stream during the time of reactivity they produce severe damage in this tissue.

The tissue damage manifests itself as a severe hemorrhagic lesion in which vascular injury is the outstanding feature. Studies of the prepared skin site at various intervals following the intravenous injection of the reacting factors indicate that the tissue changes present themselves in the following order: There first

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ensues a marked degree of venous and capillary dilatation and engorgement. This is immediately followed by severe hemorrhage, which probably results from diapedesis since but few ruptured capillaries are evident. Shortly thereafter there occurs a striking degree of edema and an intense leukocytic infiltration. At this time many of the veins and capillaries are seen to be filled by thrombi, and in rare instances the arteries may be similarly involved. The thrombi consist of amorphous, granular masses, probably platelets, with enmeshed leukocytes and erythrocytes; fibrin strands are often demonstrable. The lumens of the venules and capillaries are completely filled by the thrombi; in the larger vessels they are seen as parietal clumps. Significant endothelial alterations are not seen either at the site of the thrombi or elsewhere in the vessels. Frequently there is a marked perivascular leukocytic

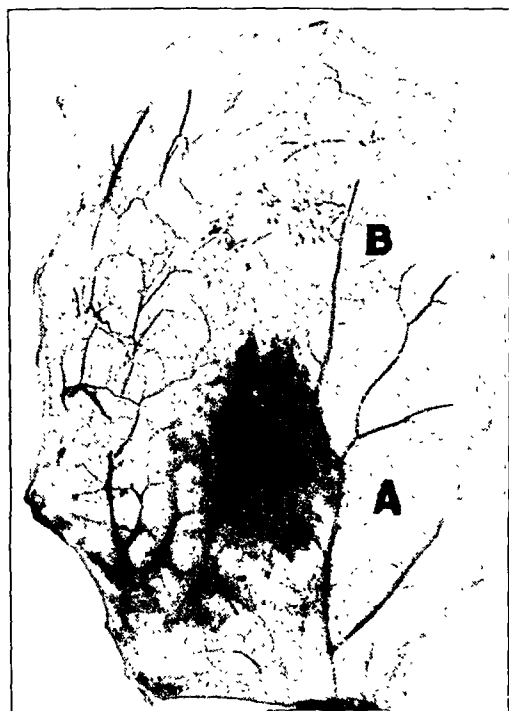


Fig. 1.—A, typical reaction; B, petechial hemorrhages following application of suction to a normal portion of skin distant from the site of typical reaction at A.

infiltration, and in some instances infiltration and edema of the vessel wall occur. The affected skin site subsequently presents a large central area of necrosis. Vessels at the periphery of the necrotic site may show organization of the thrombi. The final course of the injury is that of repair by granulation tissue growth and fibrosis.

Histologic sections of the prepared skin site in instances in which a provocative injection is not administered may show varying degrees of inflammation, which are dependent on a number of nonspecific factors. These may include the diluent employed in the preparation of the "agar washings" filtrate and substances probably resulting from bacterial autolysis. Further, the inflammation may vary with the type of organism used. The only vascular alteration that may be seen in such instances is the presence of perivascular collars of leukocytes with occasional infiltration of the vessel wall. Significant endothelial alterations or thrombi are not seen. It can readily be demonstrated,

however, that the inflammation which may occur with skin preparation is independent of the skin preparatory potency of the filtrate employed and hence is no index of the state of tissue preparedness for the phenomenon. When the skin site is prepared with filtrates of high potency there is but slight inflammation, and in such instances there is no evidence of vascular injury. It seems, therefore, that there may be no morphologic evidence for the state of preparedness of the tissues.

The state of reactivity, therefore, with which one deals in the phenomenon is not comparable to any condition hitherto described and represents some functional disturbance in the susceptibility of the tissue. A large number of various nonbacterial substances tested failed to elicit the state of reactivity. The differences between this phenomenon and local anaphylaxis and bacterial hypersensitiveness, strongly emphasized in previous publications,<sup>1</sup> do not belong to the scope of this paper.

While the state of reactivity can be elicited exclusively by certain bacterial principles, potent provocative factors may be obtained not only from bacteria but from nonbacterial preparations as well. Thus, intravascular combinations of animal proteins with passively or actively acquired homologous antibodies invariably induce severe hemorrhagic necrosis in tissues previously made reactive through preparation with potent bacterial filtrates.<sup>2</sup>

It is essential that the provocative injection be given into the blood stream. The preparatory effect, however, may be elicited in one of the three following ways:

1. Preparatory injection of active bacterial filtrate into the skin or parenchyma of internal organs (local perivascular preparation); dermis, lung (Shwartzman<sup>3</sup>); liposarcoma of guinea-pig (Gratia and Linz<sup>4</sup>); stomach (Karsner, Ecker and Jackson<sup>5</sup>); knee joint (Moritz and Morley<sup>6</sup>); appendix (Latteri<sup>7</sup>); kidney (Loi and Cardia<sup>8</sup>); adrenal (Gronchi<sup>9</sup>); conjunctiva (Cassuto<sup>10</sup>); pancreas (Reitano and Loi<sup>11</sup>), and so on.

The optimum interval of time between the preparatory and the provocative injection is twenty-four hours, although in some rabbits an interval as short as eight

1. Shwartzman, Gregory: Studies on *Bacillus Typhosus* Toxic Substances: I. Phenomenon of Local Skin Reactivity to *B. Typhosus* Culture Filtrate, *J. Exper. Med.* **48**: 247-268 (Aug.) 1928; Concerning the Specificity and Nature of the Phenomenon of Local Skin Reactivity to Various Bacterial Filtrates, *ibid.* **51**: 571-583 (April) 1930; Grading of Local Skin Reactivity to Bacterial Filtrates, *ibid.* **61**: 383-393 (March) 1935.

2. Shwartzman, Gregory: Phenomenon of Local Skin Reactivity to Serum Precipitates, *Proc. Soc. Exper. Biol. & Med.* **29**: 193-195 (Nov.) 1931; Further Studies on the Nature of the Phenomenon of Local Skin Reactivity to Bacterial Filtrates: Toxic Factors Derived from the Blood Serum, *J. Exper. Med.* **56**: 291-305 (Aug.) 1932; Phenomenon of Local Skin Reactivity to *Pneumococcus*, *J. Immunol.* **23**: 429-438 (Dec.) 1932; Phenomenon of Local Skin Reactivity to Bacterial Filtrates: Formation of Reacting Factors in Vivo, *J. Exper. Med.* **56**: 687-703 (Nov.) 1932; Phenomenon of Local Skin Reactivity to Bacterial Filtrates in Its Relation to Bacterial Hypersensitiveness, *ibid.* **57**: 859-869 (May) 1933; Phenomenon of Local Skin Reactivity to *Bacillus Tuberculosis*: I. Skin-Preparatory and Reacting Potencies of Tuberculin, O. T., and *Bacillus Tuberculosis* Culture Filtrates, *ibid.* **61**: 369-382 (March) 1935.

3. Shwartzman, Gregory: Concerning the Specificity and Nature of the Phenomenon of Local Skin Reactivity to Various Bacterial Filtrates, *J. Exper. Med.* **51**: 571-583 (April) 1930.

4. Gratia, A., and Linz, R.: Le phénomène de Shwartzman dans le sarcome du cobaye, *Compt. rend. Soc. de biol.* **108**: 427 (Oct. 23) 1931.

5. Karsner, H. T.; Ecker, E. E., and Jackson, E. L.: Shwartzman Phenomenon in the Rabbit Stomach, *Proc. Soc. Exper. Biol. & Med.* **20**: 319-320 (Dec.) 1931.

6. Moritz, A. R., and Morley, J. D.: The Shwartzman Phenomenon in the Knee Joints of Rabbits, *Proc. Soc. Exper. Biol. & Med.* **20**: 321 (Dec.) 1931.

7. Latteri, S.: Il fenomeno di Sanarelli-Shwartzman nell'appendice, *Riv. di pat. sper.* **13**: 389-405, 1934.

8. Loi & Cardia: Il fenomeno di Sanarelli-Shwartzman si verifica ugualmente in organi enervati, *Boll. Soc. ital. di biol. sper.* **9**: 775, 1934.

9. Gronchi, V.: Il fenomeno di Sanarelli-Shwartzman nei corpi surrenali, *Boll. Soc. ital. di biol. sper.* **9**: 1032, 1934.

10. Cassuto, N.: Il fenomeno di Shwartzman-Sanarelli nell'occhio e negli annessi oculari, *Sperimentale Arch. di biol.* **87**: 191, 1933.

11. Reitano, R., and Loi, L.: Il fenomeno di Sanarelli-Shwartzman nel pancreas, *Boll. Soc. ital. di biol. sper.* **9**: 196, 1934.

hours may be sufficient. The duration of reactivity induced depends on the potency and dose of the bacterial preparation and ordinarily disappears within forty-eight to ninety-six hours.

2. Injection into the vascular system of an organ (local vascular preparation). In 1929 the following experiment was performed (Shwartzman<sup>3</sup> and Baehr): Kidneys in rabbits were exposed by median laparotomy.



Fig. 2.—Histologic appearance of petechial hemorrhages at B (Fig. 1) Subepidermal capillary hemorrhage. Thrombosis absent.

The left renal vein was clamped off and 0.5 cc. of *Bacillus typhosus* "agar washings" filtrate was injected into the left renal artery. The clamp was released five minutes following the injection. The right kidney received an injection of phenolized saline solution under the same conditions. Twenty-four hours later *B. typhosus* "agar washings" filtrate, in a dose of 100 reacting units per kilogram of body weight, was injected into the ear vein. Twenty-four hours after the provocative injection the left kidneys showed severe hemorrhagic and necrotic lesions of the cortex and medulla. No gross lesions were observed in the right kidney. Systematic histologic studies were not made at the time. It was concluded from this experiment that the preparatory factors are capable of eliciting a state of reactivity by way of the vascular system of the kidney.

Since the vascular system of the kidney possesses an unusually high degree of permeability, which may be altogether different from other organs, it was of interest to determine whether a similar mode of preparation could be successfully obtained in the rabbit's ear. It was found that the state of reactivity could not be elicited by a preparatory intravenous injection of bacterial filtrates alone into clamped and nonclamped ears. The state also failed to appear in combination

with cold, xylene, ethyl urethane, pilocarpine hydrochloride, atropine, calcium gluconate, guinea-pig liver extract, histamine dihydrochloride, epinephrine chloride and solution of posterior pituitary.

Preparatory intravenous injections of active principles, however, were capable of eliciting the state of reactivity in the rabbit's ear when they were accompanied by thermal hyperemia; i. e., exposure to 45, 50 and 55 C. It was also possible to induce the state of reactivity when a mixture of the preparatory factors with testicular extract was given into the veins of clamped ears. The incubation period required may be less than two hours.<sup>12</sup>

As may be concluded from the macroscopic and microscopic studies on the phenomenon, in all probability the state of reactivity takes place in the elements of the terminal vascular bed of the tissue prepared, after a suitable incubation period. Under ordinary conditions of intravascular preparation the contact of the preparatory factors with the vascular wall lasts only as long as the circulation is stopped and probably ceases when it is reestablished. If, however, a state of enhanced permeability is induced by means of testicular extract (Reynals' factors), a diffusion of the bacterial factors is allowed from the vascular channels into the perivascular tissue. A perivascular depot of active principles



Fig. 3.—Section taken of an area 3 cm. away from the site of a typical reaction of the phenomenon in the rabbit ear and showing in the gross cyanosis and edema. Thrombi in the venules. Reproduced from the *Journal of Experimental Medicine* 62: 621 (Nov.) 1935.

thus created may, then, induce the state of reactivity through contact with the local vascular network after the necessary length of time.

The natural high permeability of the kidney vascular supply may allow the perivascular deposition of pre-

12. Shwartzman, Gregory: The Phenomenon of Local Skin Reactivity to Bacterial Filtrates: Elicitation of Local Reactivity by Way of the Vascular System, *J. Exper. Med.* 62: 621-644 (Nov.) 1935.

paratory factors from the circulating blood, making it possible to elicit the state of reactivity by way of the local vascular system without the use of additional agents.

3. Preparation of organs by a preparatory injection of the bacterial filtrate into the general circulation.

Gratia and Linz<sup>13</sup> injected two doses of bacterial filtrate intravenously twenty-four hours apart and



Fig. 4.—Horse immunized for a period of two years by weekly subcutaneous and intravenous injections of meningococcus filtrates and vaccines. Glomerulus with capillary thrombi.

observed hemorrhages in the internal organs in guinea-pigs and rabbits. Subsequently, Apitz<sup>14</sup> found that a single dose of filtrate, when given intravenously, produced similar changes in the lungs, liver and spleen but that lesions characteristic of the phenomenon were obtained in the kidneys only when the animals received two doses, twenty-four hours apart.

A similar series of experiments with measured doses of bacterial filtrate confirmed Apitz's observations.<sup>15</sup> It was found that a single injection, even though greater than the sum of two injections given twenty-four hours apart, always failed to produce a renal lesion. The necessary interval between the two injections was twenty-four hours. When the interval was decreased to six hours or increased to forty-eight hours, no lesion was obtained. However, when testicular extract was given simultaneously with the first dose it was found possible to obtain the phenomenon in the kidneys with an interval of from one to five hours between injections.<sup>16</sup> No doubt the same mechanism, namely, enhanced vascular permeability, was operative both in this and in the ear experiments.

Histologically, the renal alterations occurred in the form of focal or diffuse symmetrical cortical necrosis with arterial necrosis and thrombosis, focal glomerular capillary thrombosis and necrosis of adjacent tubules, interstitial hemorrhage and isolated focal tubular necrosis. The thrombi were similar in structure to those observed in the skin lesions. A single injection was without any effect on the kidneys.

It is thus evident that the phenomenon may also be obtained by preparing the tissue by way of the general

circulation. Thus far it has been possible to prepare only the kidney. As previously indicated, this might be accounted for by the naturally high degree of permeability of this organ.

Regardless of the method of preparation, the striking macroscopic alteration is the hemorrhagic character of the tissue response, and microscopically this is expressed in severe vascular damage; i. e., hemorrhage and thrombosis.

Evidence indicating that the lesions of the phenomenon are associated with manifestations of altered vascular response is demonstrated by the following experiments:

An area of skin prepared by the injection of bacterial filtrate responds in a normal manner to various stimuli, such as mechanical irritation, application of heat (from 50 to 70 C.), massage, epinephrine, histamine, calcium chloride, cooling by ether, cocaine, alypin, and the like.<sup>17</sup>

After the provocative injection of the active principles is made intravenously, there is manifest a modified response of the blood vessels of the tissues at sites distant from the local reaction. This is best demonstrated by the application of suction, pulling of hair, shaving with a dull razor, and the like. The normal skin sites thus treated develop petechial hemorrhages which, microscopically, consists of capillary dilatation and extravasation of erythrocytes. The enhanced fra-

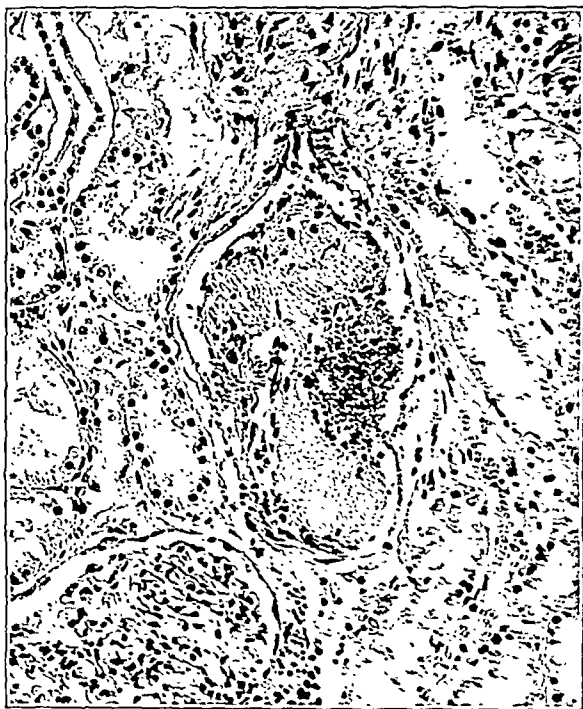


Fig. 5.—Autopsy study in a woman aged 22: Acute thrombocytopenic purpura. Platelet thrombus within arteriole of kidney. See also illustrations in article by Baehr, Klemperer and Schiffrin.<sup>20</sup>

gility of the capillaries in sites distant from the local reaction may be demonstrated for a period of from four to forty-eight hours following the provocative injection of bacterial filtrates and depends on the severity of the local lesion (Shwartzman).

13. Gratia, A., and Linz, R.: Les phénomènes de Sanarelli et de Shwartzman ou l'allergie hémorragique, *Ann. Inst. Pasteur* **49**: 131 (Aug.) 1932.

14. Apitz, K.: Die Wirkung bakterielle Kulturfiltrate nach Umstimmung des gesamten Endothels beim Kaninchen, *Virchows Arch. f. path. Anat.* **293**: 1-33, 1934; A Study of the Generalized Shwartzman Phenomenon, *J. Immunol.* **29**: 255 (Sept.) 1935.

15. Gerber, I. E.: The Shwartzman Phenomenon in Kidneys of Rabbits, with Observations on the Effects of Intravenous Administration of Bacterial Filtrates, *Arch. Path.* **21**: 776 (June) 1936.

16. Bernheim, A., and Gerber, I. E., in preparation.

17. Kielanowski, T., and Selzer, A.: Influence locale de quelques facteurs sur le cours de la réaction hémorragique de Shwartzman, *Compt. rend. Soc. de biol.* **116**: 1140-1141, 1934.

The tendency toward the hemorrhagic diathesis described cannot be correlated, as yet, with blood changes. In recent unpublished experiments of Mintz, of these laboratories, no distinct changes were observed in coagulation and bleeding time. It appears, therefore, that the changes observed are to be ascribed primarily to certain modifications in the behavior of the blood capillaries themselves.

It is also possible to demonstrate that other changes take place in sites not directly affected by the local

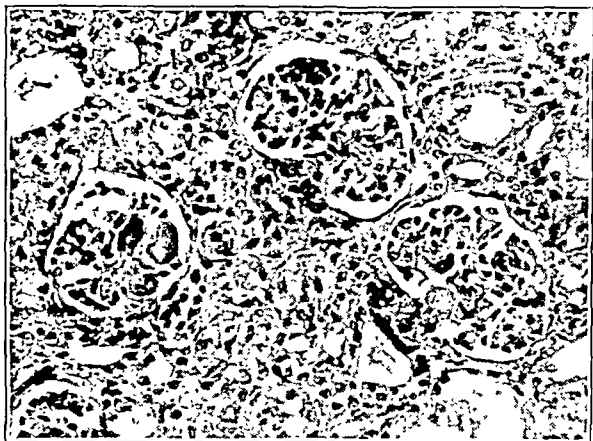


Fig. 6.—Swine: Hog cholera; many glomeruli with capillary thrombi.

reaction which predispose toward an exaggerated tendency to the formation of thrombi. When the phenomenon is elicited in the rabbit's ear by combined intradermal and intravenous injection of the active principles, sites distant from the local reaction frequently become cyanotic. In such sites it is possible to detect, microscopically, thrombosis of the venules not accompanied by inflammatory perivascular reactions.

Thus, the essential morphologic features of the phenomenon seem to express themselves in combined severe vascular damage, inflammation and necrosis at the sites of highest reactivity with subsequent repercussion of this reaction on the blood vessels distant from it, manifesting itself in altered vascular response with the formation of thrombi. The manifestations therefore offer a basis for the experimental demonstration of conditions of hemorrhagic diathesis, the mechanism of which essentially consists of the following distinct phases:

Elicitation of a latent vascular reactivity followed by the production of local vascular lesions when certain reacting factors are superimposed at suitable times, and an incidental effect of the local lesion on distant capillaries which leads to a tendency to thrombosis and to other expressions of altered vascular response (capillary "toxicosis"); i. e., hemorrhage following mechanical or other injury.

As previously mentioned, while the state of reactivity can be elicited exclusively by certain bacterial principles, potent provocative factors may be obtained not only from bacteria but from combinations of animal proteins with homologous antibodies. Thus, it is possible to fit into the experimental observations presented, at least in the form of a working hypothesis, the two major groups of hemorrhagic diathesis, namely:

Symptomatic purpura of infectious diseases in which bacterial factors alone may be implicated in the production of all the phases, and the so-called anaphylactoid conditions of hemorrhagic diathesis in which there

may be assumed the combined effect of bacterial reactivity with subsequent response to nonrelated anaphylactic processes.

In addition to the foregoing considerations, comparative studies of experimental and spontaneous lesions in animal and man suggest the significance of the phenomenon in the pathogenesis of certain morbid processes. There is a group of cases in which the histologic picture points to the possible rôle of toxins in their etiology because of the predominance of thrombi within the terminal vascular bed and hemorrhagic diathesis, although bacteriologic investigations have failed to demonstrate the etiologic factor. In 1925 Moschkowitz<sup>18</sup> described such a case. Recently Friedberg and Gross,<sup>19</sup> and Baehr, Klemperer and Schiffrin<sup>20</sup> reported cases with identical clinical and anatomic features. The chief clinical changes were thrombocytopenia and purpura with a positive tourniquet test and an acute febrile anemia. Anatomically they were distinguished by widespread thrombosis of the arterioles and capillaries affecting practically every organ, and parenchymatous hemorrhages with striking dilatation of the venules and capillaries. It is noteworthy that these cases occurred in females exclusively, which points to a still unknown additional factor in their pathogenesis.

The rôle of the phenomenon in the production of experimental renal lesions by intravascular preparation has already been mentioned. Morphologic studies manifest a striking similarity with focal or diffuse symmetrical cortical necrosis of the kidneys seen in eclampsia and various infectious conditions (sepsis, scarlet fever, malaria and the like), and in epizootic diseases; i. e., hog cholera and swine erysipelas. Although, as already indicated, renal lesions were obtained only when two injections of bacterial filtrate were given, Apitz<sup>14</sup> succeeded in obtaining the lesions

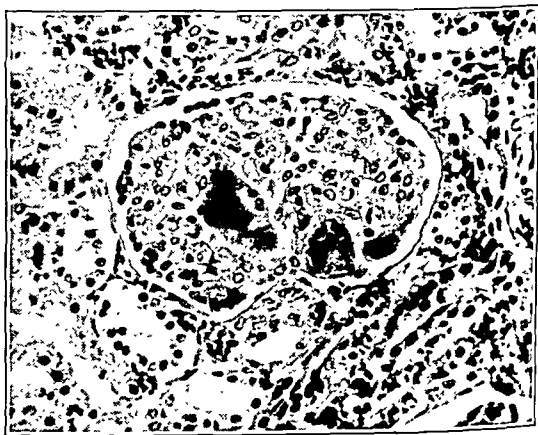


Fig. 7.—Autopsy study in an infant aged 18 months: Generalized miliary tuberculosis. Glomerulus with granular thrombi within dilated capillaries.

in pregnant animals following the intravenous administration of only a single injection. Similar experiments are under way. Thus far the kidney alterations have been obtained once in ten pregnant animals used.

18. Moschowitz, Eli: An Acute Febrile Pleiochromic Anemia with Hyaline Thrombosis of the Terminal Arterioles and Capillaries, *Arch. Int. Med.* 36: 89 (July) 1925.

19. Friedberg, C. K., and Gross, Louis: Nonbacterial Thrombotic Endocarditis Associated with Acute Thrombocytopenia Purpura, *Arch. Int. Med.* 58: 641 (Oct.) 1936.

20. Baehr, G.; Klemperer, Paul, and Schiffrin, A.: Acute Febrile Anemia, Thrombocytopenia and Purpura with Diffuse Platelet Thromboses in Capillaries and Arterioles, *Tr. A. Am. Physicians*, to be published.

Apitz considered pregnancy to represent a state of generalized increased reactivity comparable to that obtained experimentally by the introduction of the first dose of bacterial filtrate so that only a single dose was required to elicit the phenomenon. The pathogenesis of bilateral cortical renal necrosis in pregnancy in human beings has similarly been considered by Scriver and Oertel<sup>21</sup> to be related to a general state of abnormal vasomotor irritability.

The occurrence of thrombotic lesions in the arterioles, venules and capillaries in the internal organs in infectious and toxic states in human beings has long been known and has often been referred to as toxic thrombosis. Experiments undertaken by Kusama<sup>22</sup> to explain the nature of these thrombi revealed that, among other things, the injection of bacterial vaccines would elicit such vascular thrombosis in rabbits. Subsequently, Siegmund,<sup>23</sup> who had observed similar thrombi in chronic sepsis in human beings, succeeded in producing these lesions in animals by the repeated injection of bacterial vaccines over a prolonged period of time (*B. coli*, *Streptococcus*, and other microorganisms) followed by live organisms. He considered the thrombi to be the result of endothelial damage due to sensitization by the vaccines and postulated that an identical mechanism was operative in chronic infections in human beings. For many years we have seen similar thrombotic lesions in a variety of infections. Bacteria were not found in the thrombi. It is questionable whether or not such lesions should also be interpreted as the result of an altered vascular response, since Apitz and Gerber were able to produce similar thrombi in the internal organs of rabbits exclusive of the kidneys by the intravenous injection of a single dose of bacterial filtrate. In their attempts to produce the phenomenon of local tissue reactivity in the kidneys by the vascular route, they observed that control animals which had received only a single intravenous injection of bacterial filtrate very frequently showed the presence of thrombi in the veins and capillaries of the lungs, liver, spleen, adrenals and bone marrow. It is very likely that the active factor in the vaccines used by Kusama and Siegmund, responsible for the thrombotic lesions, is identical with the active principles of the phenomenon since the latter are heat resistant and may be present in vaccines.

The similarity of the thrombi produced by the injection of bacterial filtrates with those seen in human beings strongly suggests that the latter are also due to toxins and are therefore to be regarded as manifestations of a toxemia associated with bacterial infections.

#### SUMMARY

1. The phenomenon of local tissue reactivity to bacterial antigenic principles, consisting of a preparatory and provocative injection, which may be elicited in various organs, expresses itself in a vascular damage leading to hemorrhage and thrombosis.

2. This is associated with a modified vascular response to various stimuli at sites distant from the local lesion.

21. Scriver, W. de M., and Oertel, H.: Necrotic Sequestration of the Kidneys in Pregnancy (Symmetrical Cortical Necrosis), *J. Path. & Bact.* **53**: 1071-1094 (Oct.) 1950.

22. Kusama, S.: Ueber Aufbau und Entstehung der toxischen Thrombose und deren Bedeutung, *Beitr. z. path. Anat. u. allg. Path.* **55**: 459-544, 1913.

23. Siegmund, H.: Ueber einige Reaktionen der Gefäßwände und des Endokards bei experimentelle und menschlichen Allgemeininfektionen, *Verhandl. d. deutsch. path. Gesellsch.* **20**: 260-272 (April) 1923.

3. The morphologic similarity between the experimentally produced tissue changes and certain morbid processes in human beings suggests a related mechanism in the pathogenesis of the latter.

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#### ABSTRACT OF DISCUSSION

DR. GREGORY SHWARTZMAN, New York: The question was asked, Does the author believe that his phenomenon is only a particular phase of the Arthus phenomenon or that it is a separate, distinct phenomenon? I would refer the inquirer to numerous publications dealing with the subject, in which the difference is shown very clearly. I am afraid there would not be enough time to take it up now.

## ROENTGEN KYMOGRAPHY IN DISEASES OF THE HEART

A RELATIVELY NEW AND EFFICIENT AID  
IN DIAGNOSIS

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AND

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ST. LOUIS

A new and useful method has recently been developed for graphically recording the physiologic movements of an organ or structure on a single x-ray film. This procedure is called roentgen kymography. The basic principle was first conceived by the Polish physiologist Sabat<sup>1</sup> in 1911 and independently by Gott and Rosenthal<sup>2</sup> in 1912. Crane,<sup>3</sup> Hitzenger<sup>4</sup> and Knox<sup>5</sup> improved the technic, but it was Pleikart Stumpf<sup>6</sup> of Munich who devised the multiple-slit grid and perfected the apparatus mechanically, so that by 1931<sup>7</sup> the method was practical, inexpensive and of clinical value. I. Seth Hirsch<sup>8</sup> introduced Stumpf's work to American radiologists and made important and original contributions of his own, particularly in synchronizing the recording of the heart sounds, the electrocardiogram and the kymogram.

A clear and thorough understanding of the kymographic method is absolutely necessary in order to interpret the films, or kymograms, as they are called. The essential part of a kymograph is the grid (fig. 1). This is a large sheet of lead in which narrow, horizontal slits are cut every 12 mm. apart. The opening in each slit is 0.4 mm. wide. The patient stands next to the

From the Edward Mallinckrodt Institute of Radiology, Washington University School of Medicine.

Read before the Section on Radiology at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 13, 1936.

1. Sabat, B.: Ueber ein Verfahren der röntgenographischen Darstellung der Bewegungen des Zwerchfells, des Herzens, der Aorta, published in the *Polnischen medizinischen Wochenschrift*, "Lwowski tygodnik lekarski" **6**, July 1911. The original paper was reprinted in the *Fortschritte auf dem Gebiete der Röntgenstrahlen* **20**: 42-44, 1913.

2. Gott, Theodor, and Rosenthal, Joseph: Ueber ein Verfahren zur Darstellung der Herzbewegung mittels Röntgenstrahlen (Röntgenkymographie), *München. med. Wchnschr.* **59**: 2033-2035 (Sept.) 1912.

3. Crane, A. W.: Roentgenology of the Heart, *Am. J. Roentgenol.* **3**: 513-524 (Nov.) 1916.

4. Hitzenger, Karl, and Reich, Leo: Ein Beitrag zur Röntgenkymographie, *Fortschr. a. d. Geb. d. Röntgenstrahlen* **31**: 17-18, 1923.

5. Knox, Robert: Cardiac Diagnosis: A Survey of the Development of Physical Methods, *Proc. Roy Soc. Med. Section on Electrotherapeutics* **16**: 1-30 (Oct.) 1922.

6. Stumpf, Pleikart: Die Gestaltänderung des Schlagenden Herzens im Röntgenbild, *Fortschr. a. d. Geb. d. Röntgenstrahlen* **28**: 1055-1067 (Dec.) 1928.

7. Stumpf, Pleikart: Das röntgenographische Bewegungsbild und seine Anwendung (Flächenkymographie und Kymoscopie), *Fortschr. a. d. Geb. d. Röntgenstrahlen (Ergänzungsband)* **41**, Leipzig, Georg Thieme, 1931.

8. Hirsch, I. S.: The Recording of Cardiac Movements and Sounds by the Roentgen Ray (Kymohororöntgenography), *Radiology* **22**: 403-422 (April) 1934; **23**: 720-737 (Dec.) 1934.

grid and during a continuous exposure of one and one-fourth seconds the cassette slowly moves down behind the fixed grid a distance slightly less than the space between two slits—actually 11 mm. Thus between every 11 mm. of exposed film there is 1 mm. of white, unexposed film, which divides the kymogram into frames (fig. 2). It must be constantly kept in mind

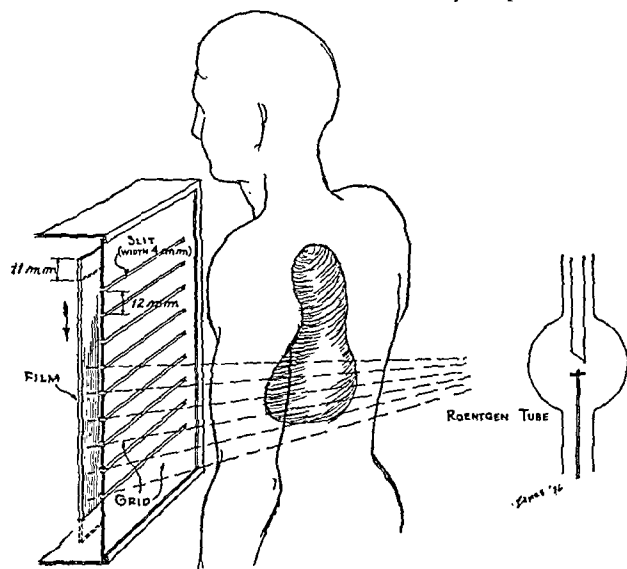


Fig. 1.—Schema of roentgen kymograph: The patient stands next to the grid and during a continuous x-ray exposure of one and one-fourth seconds the film slowly moves down behind the fixed grid a distance slightly less than the width between two slits—actually 11 mm. Thus there remains 1 mm. of white, unexposed, film, which divides the kymogram into frames (fig. 2). Roentgen kymography records simultaneously the movements of multiple points on the border of the heart. These points are the small areas on the heart border that overlie a slit. Thus the horizontal movements at the heart border produced by the filling and emptying of the heart during diastole and systole are recorded in wave form. Each frame is then a record of the movement of one of these points over 11 mm. of film.

that this method records simultaneously the movements of multiple points on the border of the heart or structure roentgenographed. The points recorded are those small areas on the heart border which overlie a slit in the grid.

By this procedure the horizontal movements at the heart border produced by the filling and emptying of the heart during diastole and systole are recorded in wave form. The vertical component of a movement is registered by placing the grid in the vertical position and moving the film horizontally. Parts that do not move, or move at right angles to the slits, appear as perpendicular straight lines. It is well to emphasize that each frame is a record of the movements of a very small segment on the heart border registered over 11 mm. of film.

#### INTERPRETATION OF KYMOGRAMS

The size and shape of the heart are studied in the same manner as in the usual roentgenogram. The trough of a wave is that particular point at maximum systole and the peak of the wave is the same point at maximum diastole. The lower leg of the wave is a record of the diastolic phase of the cardiac cycle, and the upper leg is a record of the systolic phase.

The speed and amplitude of a movement alter the contour of the resulting waves, and these factors must be appreciated when analyzing kymograms.

The time occurrence of movements in the different cardiac chambers and great vessels is determined by tracing side by side the waves in the various frames on

a sheet of ruled paper. Each tracing is begun at the white line at the bottom of the frames. The time relationship of the movements is then established by drawing parallel lines, and all points on the same parallel line occur at the same instant. For example, it is seen that the straight limbs of the ventricular and aortic waves occur simultaneously but run in opposite directions. The quick ventricular movement is from within outward as the result of its sudden filling by ventricular systole. Since the film moves at a uniform rate of speed, every millimeter which the film travels will correspond to a definite period of time. This makes it possible to calculate the time duration of any movement (fig. 3).

#### CARDIAC KYMOGRAPHY

In cardiology, kymography provides information of two sorts. First: Each chamber produces characteristic waves, and this makes it possible to identify the position and extent of the chambers in the cardiac silhouette. Fetzer's<sup>9</sup> work clearly demonstrates that in the erect position the right lower heart border is formed by the right ventricle (fig. 2). The chambers constituting the posterior cardiac shadow are recognized by making a kymogram while the patient is swallowing an opaque

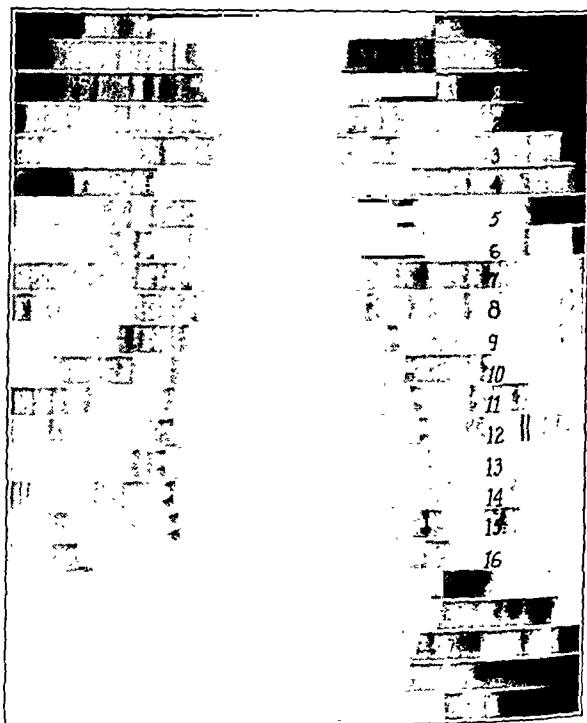


Fig. 2.—"Step-kymogram" of a normal heart: The size and shape of the heart are studied in the same manner as are the usual chest films. The trough of a wave is a particular point at maximum systole, while the peak of the wave is the same point at maximum diastole. The lower leg of the wave is a record of the diastolic phase of the cardiac cycle, and the upper leg a record of the systolic phase. Over the left heart border in frames 8 to 16 are the characteristic waves of the left ventricle; frames 6 to 7, left auricle; frame 5, pulmonary artery; frames 1 to 3, descending aorta. On the right border in frames 13 to 15 are the waves of the right ventricle; frames 10 to 12, right auricle with the superimposed ventricular waves. Frames 8 and 9 are possibly waves of the right auricular appendage. The points on the ribs and diaphragm that overlie a slit appear as steplike shadows. Structures that do not move or move at right angles to the slits appear as straight vertical lines.

meal. In this way the movements of the different chambers are imparted to the esophagus and can be recorded. The second type of information is derived

9. Fetzer, Hans: Die Lage des rechten Vorhofes und des rechten Ventrikels beim stehenden Menschen, Fortschr. a. d. Geb. d. Röntgenstrahlen 46: 29-36, Kongressheft. 1932.

from a careful study of the movements as recorded in the form of the waves: (a) changes in the movements as a whole and (b) changes in the individual waves.

(a) The most striking example of alteration in the movement of the whole heart is seen in the case of constrictive adhesive pericarditis, as has been described by Johnson.<sup>10</sup> In this case and in the case of tuberculous pericarditis reported by us<sup>11</sup> there was practically complete absence of motion over the left ventricle and right auricle, as evidenced by the straight, vertical lines on the kymograms. The aortic waves were greatly diminished. Ihre's<sup>12</sup> experience was similar with a case in which the pericardium was thickened. Stumpf<sup>7</sup> reported that in pericardial effusion the movement waves are very small.

A region of pleuropericardial-diaphragmatic adhesions<sup>13</sup> is shown as a localized area devoid of all motion in the presence of adequate cardiac motion elsewhere.

A zone of cardiac infarction<sup>14</sup> is recognized by the absence of motion in several frames with ample motion in the adjacent frames (fig. 4).

The kymogram gives a clear picture of myocardial tonicity. Ventricular waves of small amplitude with little superimposed irregularities and notches are indicative of a weakened and damaged myocardium. These

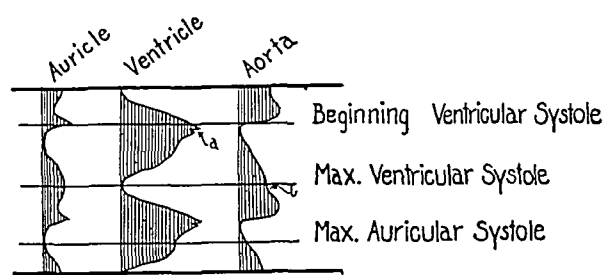


Fig. 3.—Method of determining the time relationship of movements in the different cardiac chambers and great vessels: The waves in the various frames are traced side by side on a sheet of ruled paper. The tracings are begun on the white line at the bottom of the frames. The time relationship of the movements is then established by drawing parallel lines, and all points on the same parallel line occur at the same instant. a, point at which first heart sound occurs; b, notch corresponding to second heart sound; c, (Hirsch.)

changes are frequently seen in coronary disease, in advanced arteriosclerotic heart disease and in decompensated hearts.

(b) In the second division, numerous variations and changes in the contour of the individual waves are of diagnostic importance. Four variations in the ventricular waves are characteristic of known cardiac disorders.

1. In the so-called nervous or irritable hearts<sup>7</sup> a sharp peak appears on the crest of the ventricular wave just preceding systole.

2. In hyperthyroidism,<sup>15</sup> particularly that due to exophthalmic goiter, the waves are increased in ampli-

tude and have a short total period of systole. In contradistinction to other types of heart disease, the last part of the systolic phase is the fastest which makes the ventricular waves biconvex.

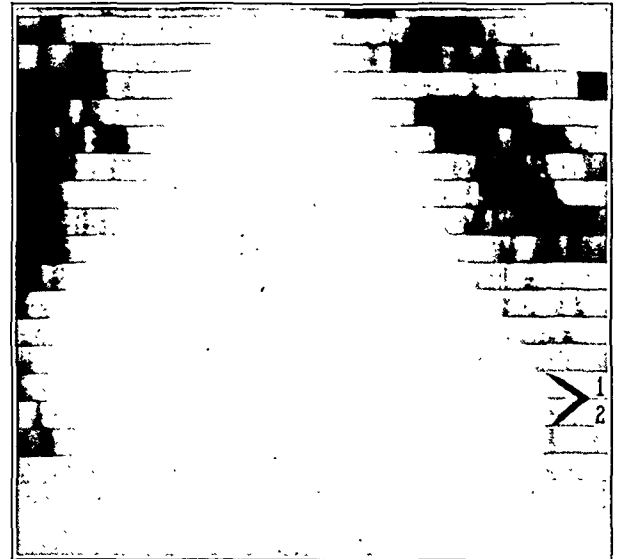


Fig. 4.—Area of cardiac infarction demonstrated on kymogram: Areas of cardiac infarction can occasionally be identified. They are recognized as areas without motion or of greatly diminished motion (frames 1 and 2) in presence of ample movement in the adjacent frames. Ventricular waves are low and poorly defined, indicating marked myocardial impairment

3. In myxedema<sup>10</sup> the ventricular waves are low and flat and, from our studies, appear to be characteristic of this disturbance.

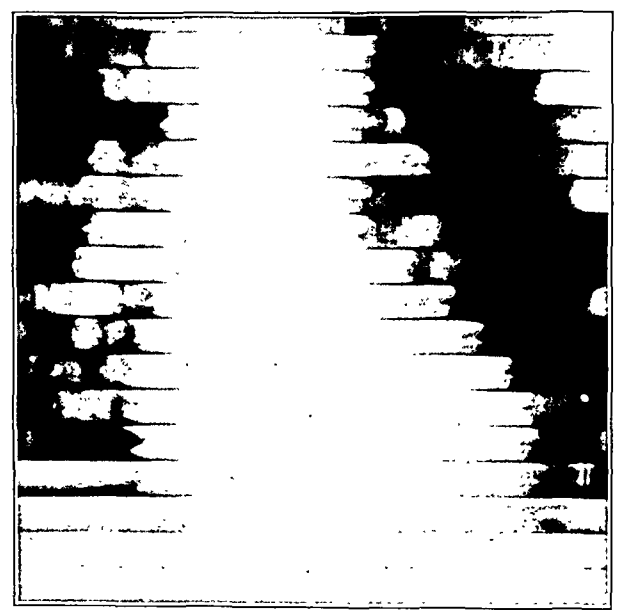


Fig. 5.—Syphilitic aortitis: The characteristic pathologic lesion in syphilitic aortitis is a destruction of the elastic fibers. When the disease has advanced to this extent, the waves over the ascending aorta become large and almost pyramidal, owing to the loss of the resilience of the aortic wall. These waves are characteristic and serve as a differential diagnosis between syphilitic and arteriosclerotic widening of the aorta.

4. In cases of rheumatic heart disease with mitral insufficiency,<sup>16</sup> fat truncated waves are seen over the lower left ventricle. Lesions affecting the ascending

10. Johnson, S. E.: The Roentgen Kymograph as a New Aid in the Diagnosis of Adhesive Pericarditis, Surg., Gynec. & Obst. **61**: 169-174 (Aug.) 1935.  
11. Scott, W. G., and Moore, Sherwood: Roentgen Kymography: Its Clinical and Physiological Value in the Study of Heart Disease, Ann. Int. Med. **10**: 306-329 (Sept.) 1936. Illustration and a brief history of this case appear in this publication.  
12. Ihre, Bengt: Röntgenkymographie ad Modum Stumpf as a Method of Examining the Heart, Acta radiol. **15**: 107-123 (April 15) 1935.  
13. Scott and Moore.<sup>11</sup> Bickenbach, O.: Die Kymographie des Herzens und der Gefäße, Fortschr. a. d. Geb. d. Röntgenstrahlen (Kongressheft) **50**: 14-15, 1934.  
14. Scott and Moore.<sup>11</sup> Schilling, Carl: Die Anwendung der Flächenkymographie in der Diagnostik der Herzerkrankungen, Fortschr. a. d. Geb. d. Röntgenstrahlen **47**: 241-253 (March) 1933. von Braunbehrens, H.: Die Herzmuskelschwäche und das Herzwandaneurysma, ibid. (Kongressheft) **50**: 15-16, 1934.  
15. Stumpf, Pleikart: X-Ray Kymography of the Heart, Brit. J. Radiol. **7**: 707-727 (Dec.) 1934. Cignolini, Pietro: Die Röntgenkymographie mit unterbrochenem Schlitze, Fortschr. a. d. Geb. d. Röntgenstrahlen **49**: 224-238 (March) 1934.

16. Stumpf.<sup>7</sup> Hirsch, I. S.: Read before the twenty-first annual meeting of the Radiological Society, Dec. 2-6, 1935. Heckmann, K.: Ueber Herzkymographie, München. med. Wchnschr. **82**: 1079-1084 (July) 1935.

aorta and semilunar valves produce very striking kymograms. In aortic regurgitation the aortic waves show a great increase in amplitude and a prompt retraction as part of the blood rushes back into the ventricle. The wave is analogous to that of the Corrigan pulse.

With stenosis of the semilunar valves the outward thrust of the aorta becomes an oblique line because it fills slowly as the blood is forced through the narrowed orifice. The ventricular systole is likewise slower.

Syphilitic aortitis<sup>13</sup> produces a kymogram as characteristic as its pathology (fig. 5). The waves over the ascending aorta are pyramidal, are increased in amplitude and retract quickly. The waves over the descending aorta are unchanged. The presence of these waves over a widened aorta makes a "grand stand" differential diagnosis from arteriosclerotic changes, in which the waves are unchanged or even decreased in amplitude.

The kymographic analysis of aneurysms<sup>11</sup> is complicated and will not be discussed in this paper other than to say that this method is another aid in the differential diagnosis between aortic aneurysms and mediastinal tumors.

We have been unable to recognize any consistent change in the kymograms of patients with hypertension and arteriosclerotic heart disease.

Of the arrhythmias, "extrasystoles" and pulsus alternans produce striking kymographic records. Other types of cardiac irregularities<sup>17</sup> have been reported, but we have been unable to identify them accurately.

#### CONCLUSIONS

1. Roentgen kymography is an objective and accurate method for graphically recording the physiologic movements of an organ or structure on a single x-ray film.

2. Kymographic waves are the records of the form, amplitude, direction, speed, frequency and time relationships of movements occurring at equally spaced points on the border of an organ.

3. The procedure is simple, practical, inexpensive and of considerable clinical value.

4. Kymography is an effort to fill the gap between roentgenoscopy and roentgenography and is not designed to replace either.

5. Both the kymogram and the standard chest film portray the size and outline of the heart, but only the kymogram gives a record of the movement of the heart chambers and great vessels.

6. Diagnostic kymographic tracings occur in certain types of heart disease, notably aortic regurgitation, aortic stenosis, syphilitic aortitis, hyperthyroidism, myxedema, constrictive adhesive pericarditis, tuberculous pericarditis, pleuropericardial-diaphragmatic adhesions, aneurysms of the ascending aorta, cardiac infarction, "irritable" heart and a few arrhythmias. These tracings also supply information concerning the tonicity of the heart muscle that is of prognostic importance.

7. Kymography is another aid in the differential diagnosis between aortic aneurysms and mediastinal tumors.

8. Roentgen kymography is a new method for the investigation of physiologic movement in the field of pure research.

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17. Stumpf, J. *Ihre*.<sup>12</sup> Heckmann, J.<sup>10</sup> Brednow, W., and Deppe, B.: Kymographische und elektrokardiographische Untersuchungen bei Rhythmusstörungen. *Ztschr. f. klin. Med.* 128: 223-237 (June) 1935. Wjke, Adolf: Untersuchungen an Herzen mittels Röntgenkymographie. *Fort-schr. a. d. Geb. d. Röntgenstrahlen* 46: 558-571 (Nov.) 1932.

#### ABSTRACT OF DISCUSSION

DR. M. C. SOSMAN, Boston: This apparatus can be made in one's own carpenter shop at a total cost of from \$30 to \$35. The very expensive apparatus is not necessary for most of the work. If one wants very accurate gadgets on one's machine it will cost more money. (Details can be found in the paper by Dr. S. E. Johnson, *Surg., Gynec. & Obst.* 61:169 [Aug.] 1935.) The method is an extremely valuable addition to the methods already in use. It gives one information not obtainable in any other way. Part of the information can be picked up by watching the heart movements under the fluoroscope. A large part, however, is too fast or too detailed to pick up, but one can get it in detail on the kymograph film. As an example of the value of this method I will mention a case in which a large tumor extended out from the left hilus. There were enlarged cervical lymph nodes, which had been increasing in size gradually in the past few months. The obvious diagnosis was lymphoma. But on the kymogram not only the pulsation of this mass but an abnormal pulsation was demonstrated. It pulsated more than either the heart shadow or the aorta, and a test was tried which I believe is practically pathognomonic of aneurysm of the pulmonary artery. That is to take two kymograms with different phases of intrathoracic pressure. The first film was made with the patient's chest full of air trying to exhale against a closed glottis, in order to squeeze as much blood out of the heart as possible. There was a barely perceptible pulsation of this mass. The other film was made after letting the breath out, and the pulsation was markedly increased. I feel that this rules out any solid tumor of the mediastinum or of the hilus lymph nodes. It makes it practically certain that there exists a very thin-walled pulsating mass. The only condition answering that description is an aneurysm of the pulmonary artery.

#### TRANSURETHRAL OPERATIONS

##### CHANGING CONCEPTIONS DURING THE PAST FIVE YEARS

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ROCHESTER, MINN.

Prior to five years ago there were few physicians who believed that much could be accomplished by transurethral operation on the enlarged prostate gland. Caulk, by virtue of long persistence and perseverance, was the first urologist to find that the results obtained with this method in cases in which the prostate gland was quite large were as good as those obtained with operation performed for the removal of small median bars or contracture of the vesical neck. Unfortunately, however, it was none too easy for the large majority of urologists to visualize the operative field with Caulk's punch and, in addition, many were frightened by the severe hemorrhage and postoperative reaction that often followed their unskillful maneuvers. It was therefore not until Stern invented the electroresectoscope, which later was modified by Davis and McCarthy, that most urologists could be induced to attempt transurethral operations except in rare instances.

The stimulus to this type of operation, resulting from the introduction of the improved Stern-McCarthy resectoscope, can well be estimated by the fact that approximately 2,500 of these resectoscopes have been manufactured and distributed. It seems likely that many who purchased these instruments did so without previous cystoscopic experience that would justify the investment. There are no doubt more than 2,500 physicians who possess the ability to catheterize the ureters or inspect the interior of the bladder. On the other

From the Section on Urology, the Mayo Clinic.  
Read before the Section on Urology at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 14, 1936.

hand, it is my opinion that few physicians, other than urologists, have had training in posterior urethral endoscopy which will enable them even to recognize the various types of prostatic deformity that are encountered, let alone attempt their removal. Increased mortality and morbidity might therefore be expected when transurethral operations are performed in spite of this lack of training and, as is well known, these expectations have been more than adequately fulfilled.

It is not my purpose, however, to dwell on these facts; rather, I would call attention to various developments in transurethral operations that have permitted their application in lesions of the bladder and urethra that do not necessarily accompany prostatic hypertrophy. Familiarity with the use of the resectoscope has naturally led to its employment for the correction of other pathologic entities. In addition, all types of operative cystoscopy have been stimulated and instruments other than the resectoscope have been used more often and to greater advantage than they were previously. I wish to emphasize at the outset that no claim is being made to priority in the development of any of these procedures.

#### TUMORS OF THE BLADDER

Before the advent of the resectoscope the complete destruction of vesical epitheliomas of a diameter much greater than 1 cm. involved repeated electrocoagulation of the growth at intervals of a week to a month. Very few urologists felt it wise to remove the tumors with a rongeur or operating forceps, because they feared the onset of uncontrollable hemorrhage. The cutting loop of the resectoscope (fig. 1) has been found a very satisfactory instrument for the rapid removal of many tumors of a pedunculate or relatively noninfiltrating type (fig. 2). The bulk of the growth can be rapidly removed (fig. 3) with the cutting current, following which the pedicle or base can be thoroughly destroyed by electrocoagulation. Often it is expedient to remove a portion of an unusually papillary tumor with forceps passed through the direct vision cystoscope and rely on the resectoscope to trim the base.

It is technically more difficult to remove those tumors which occur high in the lateral walls or dome of the bladder than it is to remove those situated in the base or near the ureteral orifices. I have found it easier to keep the cutting loop in a fixed position in relation to the sheath of the instrument during most of its excursion, and to drag the loop through the growth by moving the entire instrument rather than to employ the reciprocating mechanism. A tumor that lies in close proximity to the ureteral orifice or in fact overlies it can be excised with apparent impunity, for none of the patients have suffered from renal colic postoperatively. In several instances in which the ureteral meatus has been cut away, almost perfect healing followed, for cystoscopy months later disclosed a practically normal appearance. Pyelectasis, which was apparent prior to operation in such cases, has been observed to disappear completely, as evidenced by urograms made in the course of reexamination.

In some cases, particularly in those in which microscopic study reveals a high grade of malignancy, it is well, after removal of the tumor, to implant radon seeds in the underlying vesical wall. In certain cases in which the extent of the lesion or the general condition of the patient has precluded radical surgical removal, this method, combined with subsequent roentgenotherapy, has resulted in remarkable palliation and in some instances it apparently has resulted in a cure (fig. 4).

At the Mayo Clinic during the four years 1932 to 1935 inclusive, tumors have been destroyed in 191 cases by the methods outlined, practically always at one sitting. The results to date from such treatment have been, on the whole, very gratifying, although sufficient time has not elapsed to warrant final conclusions concerning the efficacy of the method.

#### VESICAL CALCULI

Litholapaxy has for many years been advocated for the removal of calculi in the urinary bladder. However, it was not, as a matter of fact, advised in cases in which other pathologic changes would subsequently necessitate suprapubic surgical attack. For this reason, only a minority of the patients encountered were given the benefit of a procedure which in skilful hands would save them many days of hospitalization. The presence of a considerably hypertrophied prostate gland was always deemed a contraindication to litholapaxy. I have previously reported a series of cases in which I was able to crush and remove large calculi (fig. 5) and under the same anesthetic resect the obstructing por-



Fig. 2.—Preoperative intravenous cystogram showing filling defect produced by a tumor that was subsequently removed by transurethral operation; cystoscopy one year later disclosed no recurrence.

tion of the prostate gland.<sup>1</sup> The greatest amount of tissue removed in any case was 47 Gm. It is important that the litholapaxy be performed rapidly; hence a lithotrite of the Bigelow type is used by preference. With this instrument the stone can usually be engaged readily and crushed safely if one follows the technic

1. Thompson, G. J.: Simultaneous Litholapaxy and Prostatic Resection, *Proc. Staff Meet., Mayo Clin.* 10: 689-692 (Oct. 30) 1935.

outlined in figure 6. As a general rule, it is best to crush the stone prior to prostatic resection; but if the lithotrite cannot be passed easily beyond the prostatic enlargement it may be necessary to perform prostatic resection first.

During the past four years, 161 patients with vesical calculi have been treated by conservative transurethral methods. Rather large calculi have been removed in many of the cases; in fact, during the entire year 1935

neck of the diverticulum in both instances was small, but fortunately it could be readily dilated. After the stone is drawn into the bladder it is crushed in the usual manner. I recognize that this procedure does not abolish the diverticulum, although I have noted in many cases that vesical diverticulitis often disappears and the urine becomes clear after removal of the obstructing portion of the prostate gland. Cabot and I will give a complete report on this subject at a later date.

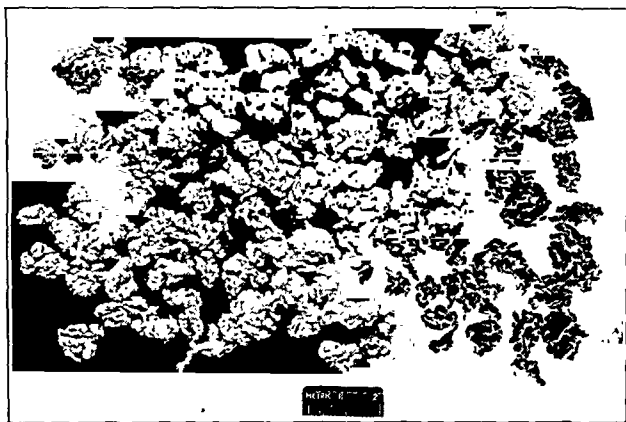


Fig. 3.—Tumor tissue removed by transurethral operation (weight 37 Gm.).

it was necessary to perform suprapubic lithotomy in only four instances. The saving in hospital expense to the patient between two-stage lithotomy and prostatectomy as compared with one-stage litholapaxy and prostatic resection is remarkable.



Fig. 4.—Radon seeds implanted in vesical wall following removal of an epithelioma, grade 4. Almost three years has elapsed without recurrence. Apparent migration of some of the radon seeds may be noted.

During the past year I have been able several times to remove calculi from vesical diverticula. In two cases the stones were too large to grasp with forceps and hence it was necessary to dislodge them from the diverticulum into the bladder by using a loop of banjo wire, which was encircled around the stone. This was done with a direct vision cystoscope (fig. 7). The

#### URETERAL CALCULI

Bumpus and I,<sup>2</sup> in 1930, reported a clinical study of 1,001 cases of ureteral calculi; in 60.7 per cent of cases in which a calculus occurred in the lower part of the ureter it was removed by transurethral methods. In most of the cases in that series more than one attempt was made before the stone was obtained, and many times it was not passed until a number of days subsequent to manipulation. During the years 1932 to 1935

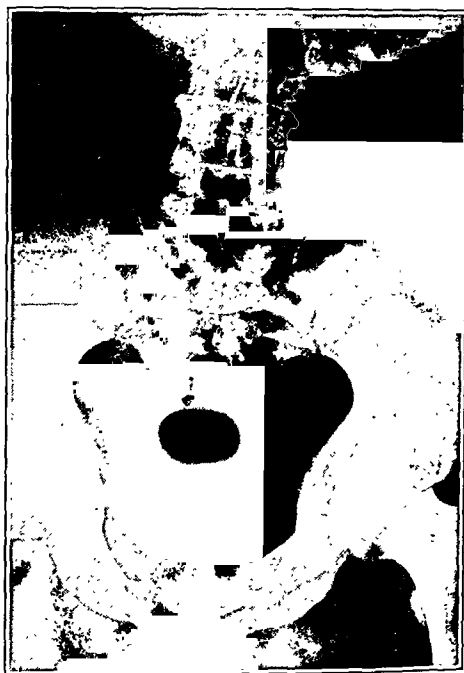


Fig. 5.—Large vesical calculus removed by litholapaxy; prostatic resection was done under the same anesthesia.

inclusive, stones have been removed from the ureter by transurethral methods in 180 cases; in the very large majority the first attempt was successful, the calculus being removed at the time of the operation, either by engagement with an extractor or by the safer method of enmeshing it with multiple catheters.

In my experience a stone dislodger or extractor will be found most satisfactory in those cases in which a very definite ureterectasis exists, for the instrument can be introduced into the enlarged ureter easily and can be manipulated freely, which fact aids tactile sensation. Through alternate expansion and contraction of the instrument it is often possible to feel the approximate position of the stone. Ureteral catheters, on the other hand, are most valuable in those cases in which there is little or no ureterectasis. An attempt to force an extractor into a small ureter may result in perforation and certainly will cause severe reaction. One should prefer to insert two or three catheters alongside

2. Bumpus, H. C., and Thompson, G. J.: Stones in the Ureter, *Surg., Gynec. & Obst.* 50: 106-109 (Jan.) 1930.

the stone and leave them in place for from forty-eight to seventy-two hours. Twisting the catheters at that time will often be more profitable than doing so immediately after they are placed.

Ureteral stone extractors or dislodgers of any type generally produce much more trauma to the ureter than do ureteral catheters. Hence I have felt that all attempts to remove stones with these instruments should

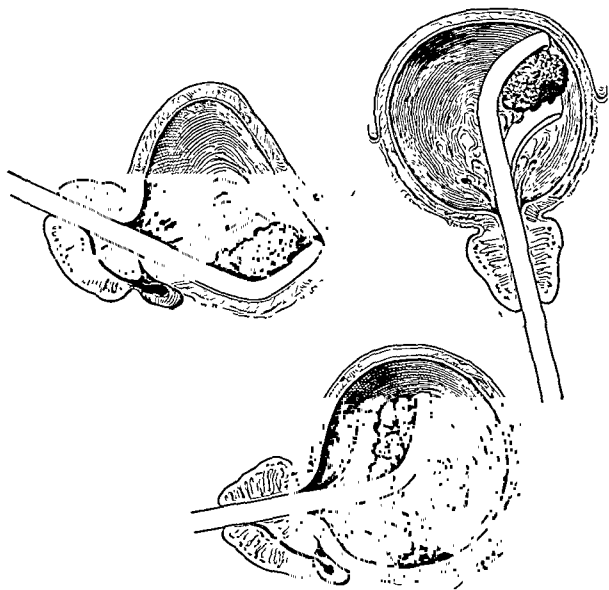


Fig. 6.—Diagrammatic representation showing three positions of the lithotrite during lithotripsy. Depressing the base of the bladder will cause the stone to gravitate quickly to the jaws of the instrument; after the stone has been grasped, rotation of the lithotrite will make certain that the vesical wall has not also been included. The stone is then crushed.

be made in the hospital. In order to guard against severe systemic reaction from ureteritis and pyelonephritis, manipulation should be done in a strictly aseptic manner, and drainage by means of the ureteral catheter is deemed necessary for several days following unless the extraction has been unusually easy.

#### PROSTATIC CALCULI AND PROSTATITIS

Attention has been previously called to the value of transurethral procedures for the removal of prostatic calculi.<sup>3</sup> These calculi often do not produce symptoms. Hence I have practically always disregarded their chance finding by routine roentgenologic study. However, when either for local or for focal reasons it is essential to reduce or eliminate the prostatitis which generally is found in association with prostatic calculi, it is not a very difficult task to remove them by transurethral incision. I prefer to use the Collings knife, for one can gage the depth of the incision, making it no deeper than is actually necessary to expose the nests of stones. Such operations must always be done with thorough recognition of the fact that the procedure is a minor one as far as the patient is concerned. Lack of caution might easily result in a major complication, if not in death.

In eight cases I have incised acute prostatic abscesses with the Collings knife, thus evacuating a large pocket of pus through the urethra. This I believe is a much better method than is the old practice of puncturing the abscess with a urethral sound, for one can make a wide incision and if the pocket is multilocular divide any

septums that might interfere with free drainage. The immediate relief from pain is very striking and in no instance has cystitis or pyelonephritis prolonged the convalescence; this provides further evidence that the bladder is as a rule very resistant to infection.

The treatment of chronic abscesses of the prostatic ducts by transurethral saucerization or incision, which promotes free drainage, has also been described in a former article.

#### URINARY OBSTRUCTION AMONG WOMEN AND CHILDREN

Congenital obstruction of the posterior urethra or vesical neck among boys is a clinical entity that has been recognized for years. Ten such cases have been encountered at the clinic in which it has been possible to relieve the obstruction by actual removal of tissue with the baby punch or by incision of the posterior urethra or vesical lip with the cutting current applied through a thin wire electrode. The preoperative and postoperative urograms in such a case are shown in figure 8. The patient in this instance was enabled to empty his bladder completely, in contrast to 20 ounces (590 cc.) of residual urine that was present prior to operation. The remarkable effect on general health was evidenced by a gain of approximately 60 pounds (27 Kg.) during the ensuing two years.

Eleven women have had their ability to urinate restored by division of a portion of the sphincter with the Collings knife or by removal of sections of tissue from the vesical neck with the resectoscope. I<sup>4</sup> have previously reported one of these cases in which the patient was 73 years of age and had been unable to void for many months. The removal of five pieces of tissue restored normal vesical function. These twenty-one instances of urinary obstruction among women and children will be described in detail at some future date.

#### NEUROGENIC VESICAL DYSFUNCTION

Braasch and I<sup>5</sup> have reported a group of cases of atonic bladder. In several cases a diagnosis of atypical cord bladder had previously been made even though no abnormal alteration in motor or sensory nerve supply could be found by any of the ordinary methods of neurologic examination. An imbalance of the nerves controlling micturition might nevertheless have existed in these cases, thus resulting in a spasticity of the vesical sphincters which finally led to actual, although slight, hypertrophy. Whatever might be the mechanism that produced urinary retention, transurethral resection of a portion of the internal sphincter restored normal vesical function.

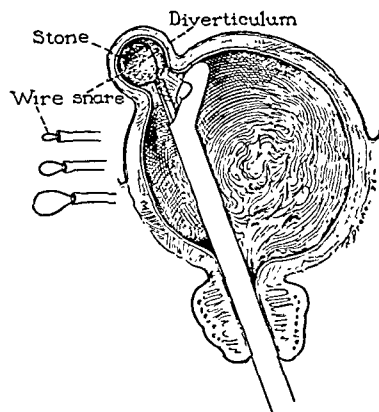


Fig. 7.—Withdrawal of a stone from a vesical diverticulum with a loop of wire; the orifice of the diverticulum must be pliant and easily dilatable.

3. Thompson, G. J., and Cook, E. N.: Chronic Prostatitis and Prostatic Calculus: Treatment by Incision with the Electrocautery, J. A. M. A. 104: 805-807 (March 9) 1935.

4. Thompson, G. J.: Transurethral Operations for Relief of Dysfunction of the Vesical Neck in the Female, Proc. Staff Meet., Mayo Clin. 10: 598-600 (Sept. 18) 1935.

5. Braasch, W. F., and Thompson, G. J.: Treatment of the Atonic Bladder, Surg., Gynec. & Obst. 61: 379-384 (Sept.) 1935.

Since then, one patient has been seen who definitely had a cord bladder which resulted from a transverse myelitis attributable to fracture of the spinal column. For many months subsequent to the injury he had urinary incontinence, but he finally regained full control of his urinary sphincters and was able to urinate with great effort and force exerted with the abdominal muscles. He has never regained full use of his legs and spends a great deal of time in bed. Cystoscopy disclosed a relaxation of the prostatic urethra, which was regarded as a typical result of injury to the spinal cord, but the internal sphincter was definitely spastic and hypertrophied. Division of this thickened sphincter with the resectoscope has made it possible for the patient to urinate without effort and to empty his bladder completely; in addition, there has been no loss of urinary control.

I am of the opinion that cases of this type will occasionally be encountered and that the condition can be definitely benefited by transurethral operation. A careful selection, however, seems necessary and promiscu-

the clinic for transurethral resection, belonged to this age group. Only three of these patients died, a mortality of 2.7 per cent.

Another group of patients who have been relieved by transurethral operation is that in which renal function has been seriously impaired by the long standing obstruction and resultant back pressure. The value for urea often is fixed at more than 100 mg. per hundred cubic centimeters of blood, even after prolonged periods of drainage of the bladder through a urethral catheter or suprapubic tube. In spite of this severe renal injury, prostatic resection can be performed in these cases with only slight risk. It is essential, however, that complications be avoided.<sup>7</sup> Thorough resection followed by very careful postoperative attention to guard against hemorrhage and infection is therefore extremely important.

#### MORTALITY

There has been no mortality from any of the transurethral procedures described, except in the group of cases in which prostatic resection was performed. Of 1,987 patients subjected to transurethral resection for either benign or malignant involvement of the prostate gland during the years 1932 to 1935 inclusive, only fourteen died, a mortality of 0.70 per cent.

#### SUMMARY

During the past five years the great value of transurethral operations for the relief of various disorders of the bladder, urethra and prostate gland has become apparent. Conservative transurethral procedures can now be employed in many cases in which open surgical operations formerly were required. Elderly patients who, because of the risk involved, declined to submit to other types of operation are reporting to the urologist for transurethral operation and are being relieved of symptoms with minimal risk.

#### ABSTRACT OF DISCUSSION

DR. GEORGE R. LIVERMORE, Memphis, Tenn.: I wish to endorse Dr. Thompson's use of the cutting current through the resectoscope loop for the rapid removal of many tumors of the bladder, as I have found it most satisfactory for this purpose. My experience coincides with his with regard to the freedom from cicatricial contracture even when the ureteral meatus is involved. I rather doubt the wisdom of his advice, however, with regard to performing litholapaxy and prostatic resection at the same sitting. There is usually some reaction following litholapaxy, especially when copious irrigation and perhaps removing larger fragments with cystoscopic forceps are necessary, and this, added to that of resection, may be sufficient to add to the mortality. No doubt he selects his cases and in this way is able to limit his mortality. I am in favor of the cystoscopic removal of ureteral calculi and feel that it should be attempted and persisted in so long as the patient's condition and the kidney functional output will permit. Both my ureteral stone dislodger and ureteral dilator have aided me in prompting the passage of calculi. Dr. Thompson's caution as to their use is especially sound. Transurethral resection is the greatest urologic advance since Hugh Young showed the value of preoperative preparation for prostatectomy.

DR. HERMAN L. KRETSCHMER, Chicago: Dr. Thompson's paper illustrates the general trend away from open surgery in favor of transurethral surgery in the treatment of various lesions in the genito-urinary tract. He is to be commended for again calling attention to the importance of a thorough knowledge of the normal and pathologic anatomy of the deep urethra when these various forms of instrumentation are undertaken. My experience in the treatment of bladder tumors by means of the resectoscope is in close accord with his experi-



Fig. 8.—Urograms in a case of congenital obstruction of the vesical neck; *a*, preoperative urogram showing marked hydronephrosis and hydroureter; patient had uremia; *b*, postoperative urogram made two years later and showing marked reduction in pyelectasis; patient's health excellent.

ous operation on all patients suffering with cord bladder would no doubt result in permanent incontinence in the majority, as well as other harmful effects.

#### RESECTION OF THE PROSTATE GLAND

Prostatic resection has been a boon to many men during the economic depression of the past five years. The short stay in the hospital has enabled hundreds of them to afford operative relief. Of greater interest to me, however, is the fact that this operation, because of its distinctly lessened morbidity and mortality, has encouraged men to seek relief who formerly suffered the tortures of an obstructed urinary stream between intervals when they resorted to the use of a catheter. The mortality of prostatectomy in cases in which patients are more than 75 years of age has always been high. The patient as well as the physician has recognized this fact and as a consequence has elected in years gone by either to neglect his condition or to rely on nonoperative treatment rather than submit to prostatectomy. As evidence of this fact, I shall compare a few figures. Hunt,<sup>6</sup> in a report of 1,000 cases in which prostatectomy was performed, found that only 3.1 per cent of the patients were 75 years or more of age. During the year 1935, on the other hand, 109 patients, or 15.7 per cent of 695 patients who came to

6. Hunt, V. C.: Benign Prostatic Hypertrophy: A Review of One Thousand Cases, *Surg., Gynec. & Obst.* 46: 769-773 (June) 1928.

7. Thompson, G. J.: The Prevention of Complications of Transurethral Prostatic Resection, *Urol. & Cutan. Rev.* 38: 847-851 (Dec.) 1934.

ence. Large papillomas can be removed in one or two sittings; this is a distinct advance over their destruction by means of electrical fulguration. The question of the treatment of stone associated with prostatic obstruction depends on several factors: the size of the stone, the presence or absence of infection, and the skill of the surgeon in using the lithotrite. In cases of small stones with but little or no infection, the resection and the litholapaxy are carried out at the same time. If the stone or stones are large they are crushed first, the bladder is drained with an indwelling catheter and the resection is carried out a few days later. If the stones are large and the infection marked, a suprapubic cystostomy is done first and the resection is done later after the bladder infection has cleared up. In my opinion after-care is just as important as is the preoperative treatment. I have changed my views regarding the institution of preoperative drainage. Preoperative catheter drainage is not carried out if the patient has a normal renal function, not more than 6 ounces of residual urine, if the urine is clear or contains only a few pus cells, and if the physical examination shows the heart and lungs to be in good condition. A recent survey showed an interesting fact regarding the frequency of cardiac cases that were sent in for resection. In the days of surgical prostatectomy about 35 per cent of the patients had heart lesions. A recent survey showed that about 65 per cent have cardiac disorders. This is a relatively high incidence and, I think, is due to the fact that many more so-called bad risk cases are sent in for resection that were formerly sent in for prostatectomy.

DR. WILLIAM J. ENGEL, Cleveland: The widespread use of prostatic resection in the past five years has been a large factor in reawakening interest in transurethral operations of other types. It not only increased the appreciation of the possibilities of cystoscopic surgery but has made urologists more expert in the use of urethral manipulations. Transurethral surgery, where applicable, has three indisputable advantages over open operation: (1) It lowers the mortality rate, (2) it saves time for the patient, and (3) it saves money for the patient because of a shorter period of hospitalization and convalescence. There may be those who have been misled to believe that it is easier, but from experience with both the open operation and the transurethral method in similar lesions I am convinced that the transurethral operation is in most instances decidedly more difficult for the surgeon, so that the advantage accrues solely to the patient, where it belongs. The cystoscopic surgeon must have more patience, exercise greater care, and have a more intimate knowledge of the bladder and urethra in health and in disease. The intravesical excision of certain bladder tumors has been an outgrowth of prostatic resection. Using the McCarthy resectoscope, I have removed pedunculated growths at a single operation in twenty-five cases, with gratifying results. The operation is applicable to pedunculated tumors as large as 5 cm. in diameter, or, roughly, the size of a golf ball. The method is vastly superior to repeated fulguration and in suitable cases is to be preferred to cystostomy, for I am sure the tumor can be removed more thoroughly with cystoscopic vision in the distended bladder than with the unaided eye in the opened collapsed bladder, and there is less chance of overlooking small, secondary growths in the bladder and prostatic urethra. In suitable cases it is an injustice to the patient to subject him to suprapubic cystostomy. The results of prostatic resection exemplify the widespread favorable results achieved in the past five years by those who have adopted this method and stuck to it. The large series of cases being amassed collectively indicates that (1) more patients are accepting operation because of the increased safety and (2) more are accepting operation earlier. The increased safety is reflected in the low mortality statistics that have been reported.

DR. LOUIS M. ORR JR., Orlando, Fla.: Divergent views on the subject of transurethral resection prompted an attempt to evaluate the procedure by questioning several members of the American Urological Association. One hundred and forty-six questionnaires were sent out. Sixty-eight were answered. Five recipients declined to answer. Additional questionnaires from Dr. Warren Hewins increased the total number to seventy-three. The seventy-three surgeons performed 13,104 prostatic resections and 5,062 prostatectomies during the same period. These totals show that resections are almost three times greater

in number than prostatectomies. There were also 214 operations on the bladder neck performed with the Young punch or similar "punch" instruments. The number of deaths from resection was reported to be 370, or 2.8 per cent, from prostatectomies 195, or 3.8 per cent. Primary hemorrhages accompanying resection, which necessitated opening the bladder, numbered 107. Secondary hemorrhages requiring fulguration, 164; transfusion, 116; both, fifty-four. Six hundred and forty-eight severe infections were reported associated with resection, or 4.9 per cent of all cases. Forty surgeons reserve the procedure for small glands. Thirty-two employ it in all types of hypertrophy. Four hundred and eighty-eight secondary resections were necessary because of insufficient removal of tissue at the first operation. No instance of regrowth of tissue was mentioned as a cause for the second resection. One hundred and five patients were reported who had troublesome incontinence, both temporary and permanent. Subsequent prostatectomies were performed on 172 patients who had previously had resection. This figure would probably run considerably higher if all cases of resection could be accurately followed. In most instances the men performing the largest number of resections were having the best results and recommended the operation for practically all types of prostatic obstruction. Those performing fewer resections were more cautious in their choice of operation. The majority recommended that the procedure be used in only the carefully selected cases and be limited to the smaller atrophic glands, median bars and as a palliative relief in cases of malignancy. Three men reported that they did not see any place for resection. Two asserted that the operation was based on unsound surgical principles but occasionally gave excellent results. Sound principles underly prostatic resection.

DR. A. G. FLEISCHMAN, Des Moines, Iowa: The question resolves itself into one of morbidity and what constitutes an ideal result. In some of the patients on whom more than one resection was performed, I found that there still persisted a definite amount of residual urine and infection. My own results with transurethral resection have not been as good as when I was doing a clean-cut, radical suprapubic prostatectomy. Whence do all these prostates come? There seems to be an unusual deluge of them. Probably they are being seen in an earlier stage. I recall that in a year and a half spent in one of the largest clinics in this country, under supervision of a man recognized as one of the peers in American urology, it was considered a pretty good ratio when the prostatectomies numbered from 200 to 250 a year. Some types of cases yield to ordinary massage and to noninstrumental procedures. I feel also that, besides the question of the number of prostates and the economic phase of this procedure, quality should be mentioned. Let us follow the suggestions expressed by our chairman today and train ourselves in all definite recognized methods and not develop our procedures along one track.

DR. JOHN F. PATTON, St. Louis: It may be said of transurethral surgery that it is the creator of modern urology, and as such it deserves to be preserved. The greatest strides in urology during the past decade have been made along this line, an ever increasing application of transurethral procedures for the treatment of diseases of the posterior urethra, prostate, bladder and even the ureter and kidney. The necessity for major surgery has been materially decreased and the mortality rate reduced to a marked degree. Transurethral removal of the prostate is now an accepted surgical procedure. The extent to which it is applied by any one operator is entirely an individual matter. The percentage of application in some hands is as low as 20, while in other clinics it is applied in as high as 100 per cent. If the prostate is large and the patient a good surgical risk, the gland should be enucleated. Dr. Caulk applies the cautery punch in almost 85 per cent of all obstructions; I am somewhat more conservative. Since the efficacy of this type of surgery has been proved, the operator is more concerned now with the development of its technic and the improvement of the method to the end result of lessening the complications and further reducing the mortality. In 1933, from an experimental and clinical study, Dr. Caulk and I called to the attention of the profession the deleterious effects and the hazards that may be encountered from the application of the high frequency current in prostatic resections. It is

astounding to learn that 3,000 such instruments have been sold to the profession. Certainly many of these are in incompetent hands, and the untoward complications that have resulted undoubtedly explain the unfavorable reaction which has been created in the minds of certain of the general profession toward transurethral surgery as a whole. Of the various methods employed the cautery punch and the instrument used by Dr. Thompson at the Mayo Clinic are by far the safer instruments in the hands of most men. In Dr. Caulk's series of more than 1,300 cases the mortality rate remains below 1 per cent. Hemorrhage has ceased to be a troublesome factor and sepsis is almost negligible. I have followed these cases post-operatively for the past eight years and have encountered none of the serious complications, such as extreme sepsis or rectourethral fistulas, which have been reported following the use of the high frequency current. I would like to call attention to one complication which has given trouble on several occasions, and that is a stricture at the meatus, undoubtedly due to the large catheter. At the present time, we are replacing it with a smaller one after twenty-four hours, and I believe this will be eliminated.

DR. OTTO J. WILHELM, St. Louis: I cannot present the gratifying mortality rate that has been presented here. I have gathered statistics from our work at the county hospital and from private work. It is interesting to note that there is a difference in the statistics from private and clinical work. The series include 183 private cases and 156 cases from the county hospital files, a total of 339 cases. The youngest patients were twin brothers, aged 24, who had congenital bars at the bladder neck. The oldest patient was 96; he also had a resection and left the hospital in good condition. A point of interest is that the mortality rate is definitely higher in the clinical patient, which can be explained by the extreme state of malnutrition found in these patients previous to operation. Hemorrhage still exists regardless of the type of instrument used, as the biggest bugbear in transurethral operations. And next in importance is pulmonary edema. I have come to the conclusion that pulmonary edema is an evidence of too much surgery done at one time. I mean by this that the operator gets too enthusiastic, works too long on one patient and does too much at one time, rather than doing part at one time and then resuming his work at another sitting. Quite a number of repeat operations have been done over a two and a four year period. More patients return after an interval of four years. Whether the operator is at fault here or whether this is a natural incidence, I cannot say. The question that presents itself here is: Does the operator remove sufficient tissue primarily or is this a regrowth of adenomatous tissue as occurs in poorly dissected tonsils? The severest hemorrhage and the largest vessels occur outside the 4 to 8 o'clock area on the sphincter margin. This bleeding is often so profuse that it is impossible, even with constant irrigation, to detect the bleeding points and coagulate them. In severe hemorrhage, cystotomy and packing is the only recourse.

DR. HERMON C. BUMPUS JR., Pasadena, Calif.: Three salient points have remained in my mind. First, the applicability of this procedure is proving far greater than former methods of treatment. The decreased risk has resulted not alone in many patients being treated earlier, before irreparable anatomic and physiologic changes have occurred, but many successful resections are being done in which such changes have progressed to such a point that the patients would have formerly been considered in much too poor physical condition to undergo any surgical procedure. This greater applicability is strikingly demonstrated by the series of 675 cases from the Mayo Clinic in one year reported by Dr. Thompson. Formerly not more than one third of that number of patients were considered suitable subjects for prostatectomy in that institution in any one year. The fact that in 46 per cent of these it was necessary to remove less than 10 Gm. of tissue to relieve the obstruction indicates that many are seeking relief earlier, before deformed bladders and impaired renal function have developed. That thirty-eight patients over 80 years of age in this series underwent resection without a death is certainly impressive evidence of the larger number of increased surgical risks that have been able to benefit from this procedure when employed by the experienced. Secondly, it has been demonstrated that

in the past too great importance has been placed on the pre-operative preparation of these patients. Protracted drainage is of inestimable value in the presence of impaired renal function or in the reduction of excessive infection. In the past it has been used too frequently when not required, with the result that the patients have been made poorer rather than better surgical risks. Last year I did 84 per cent of resections without such preparation and am interested to find that in Dr. Thompson's series 65 per cent were operated on without preparation. The excellent results he obtained in the 35 per cent receiving preoperative preparation attests to the keen discrimination with which it was applied. Thirdly, with each discussion of the subject it becomes more apparent that transurethral resection is a highly technical procedure, to be mastered only where a large number of cases are done, as Dr. Orr's figures illustrate. Unless one has such an opportunity to master the technic, one will derive better results by employing the older and simpler methods of treatment, leaving to the experienced this more technical and difficult procedure with its greater degree of applicability and lessened risk.

DR. GERSHOM J. THOMPSON, Rochester, Minn.: I agree that so-called prophylactic prostatic resection should be avoided. I do not believe in operating on young men. The older man is the one who has been benefited by the development of prostatic resection. Dr. Kretschmer has wisely called attention to the lack of reaction from the secondary operation; this is a point that deserves emphasis, for it strengthens my opinion that the primary resection should not extend beyond a period of forty-five minutes. I am sure much less surgical shock and mortality will result in any group of patients if, in difficult cases, the operation is done in two stages rather than in a single stage that is quite prolonged.

## THE TREATMENT OF PERIPHERAL OBLITERATIVE ARTERIAL DISEASES

BY THE USE OF INTERMITTENT VENOUS OCCLUSION: A REPORT OF THE RESULTS IN  
TWENTY-NINE CASES

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AND  
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BROOKLYN

The principle of intermittent venous occlusion and its application to the treatment of organic obliterative vascular disease have recently been reported by us.<sup>1</sup> Briefly, this procedure consists of the application to the proximal portion of an extremity of a pneumatic cuff, which is inflated to a pressure approximating the diastolic level of arterial pressure. This results in the creation of venous obstruction and when the pressure is released a state of reactive hyperemia develops. The apparatus which we have devised for this procedure is designed to create alternating periods of venous congestion and release of this congestion.<sup>2</sup>

Lewis and Grant<sup>3</sup> have demonstrated that there occurs, during the release of venous congestion, an increase in arterial flow of as much as 600 per cent, depending on the degree and duration of application of venous congestion. They showed that this increase in arterial flow is the result of an active vasodilatation,

From the Metabolic and Medical Services of the Israel Zion Hospital. The authors are indebted to Dr. Henry Joachim for his cooperation in permitting the use of material in the medical services of the Israel Zion Hospital and the Jewish Home for Incurables.

1. Collens, W. S., and Wilensky, N. D.: Intermittent Venous Occlusion in the Treatment of Peripheral Vascular Disease: A Preliminary Report, *Am. Heart J.* **11**: 705 (June) 1936.

2. Collens, W. S., and Wilensky, N. D.: An Apparatus for the Production of Intermittent Venous Occlusion, *Am. Heart J.* **11**: 721 (June) 1936.

3. Lewis, Thomas, and Grant, R. T.: Observations upon Reactive Hyperemia in Man, *Heart* **12**: 73 (June) 1925.

which occurs in the arterioles. Although they found that the maximal increase in flow could be obtained by applying 90 mm. of pressure for fifteen minutes, we found that the use of this procedure in disease states functioned optimally at from 60 to 80 mm. of mercury pressure for alternating periods of two minutes.

We should like at this point to state that our method of treatment is not to be confused with alternating

his right leg was amputated in the midhigh region. Eight years before, he developed an ulcer on the dorsum of his left large toe which rapidly spread to cover the entire dorsum of his foot. He had received 300 cc. of 5 per cent salt solution intravenously three times a week for seven years without relief of pain or any influence on the state of his ulcer. He had been an in-bed patient in Montefiore Hospital for fifteen months, during which time he received, besides intravenous hypertonic saline solution, typhoid vaccine intravenously and local exposures of the ulcer to ultraviolet rays. One year before, in order to relieve his pain, he had a section performed on all the peripheral nerves, including the anterior and posterior tibials, peroneal and musculocutaneous. Although his pain immediately dis-

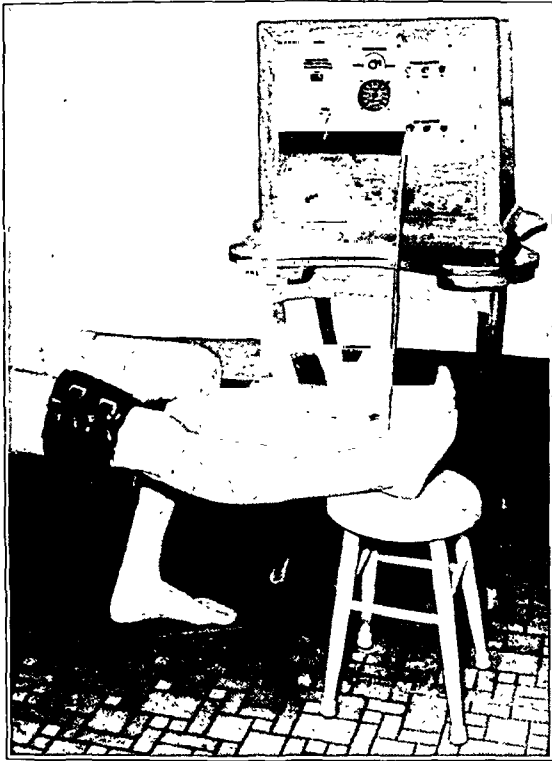


Fig. 1.—Application of intermittent venous occlusion to proximal portion of extremity

suction and pressure. Whereas suction and pressure is employed by affecting the environmental pressure of an entire extremity by means of a boot, our procedure is based on the principle of reactive hyperemia obtained by the application of a pneumatic cuff about the proximal portion of the extremity (fig. 1) and does not at all influence the environmental pressure around the extremity.

We have applied this method of treatment to twenty-nine patients suffering from peripheral arterial disease. The types and distribution of these cases are seen in table 1. These cases were unselected and were used for our studies regardless of the type or severity of peripheral vascular obstruction. No other method of treatment was employed in any of these cases other than that of intermittent venous occlusion. Of course, patients suffering from ulcer or gangrene were put to bed; otherwise they were treated as ambulatory cases.

THROMBO-ANGIITIS OBLITERANS

Five patients suffering from this disease came under our observation since the application of this method of treatment. The most outstanding results in this series were the complete and rapid relief of pain and the ability of the ulcers to heal.

One patient (fig. 2) had been suffering from thrombo-angiitis obliterans for twelve years. Ten years before,

TABLE 1.—Distribution of Twenty-Nine Cases

	Number of Cases
Thrombo-angiitis obliterans .....	5
Arteriosclerosis obliterans	
(a) Diabetic	
Without ulcer .....	1
With ulcer .....	12
(b) Nondiabetic	
Without ulcer .....	9
With ulcer or gangrene.....	1
Frost bite with gangrene.....	1
Total.....	29

appeared, all his toes became gangrenous within two weeks and spontaneously amputated subsequently. The size of the ulcer did not change. At the end of a year the pain returned. He left the Montefiore Hospital and finally entered the Israel Zion Hospital, begging for an amputation. The patient was observed for three days during which time it was necessary to administer enormous doses of sedatives and narcotics. Intermittent

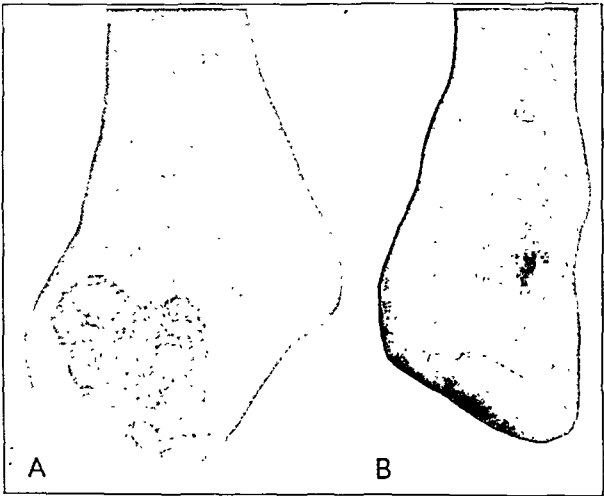


Fig. 2.—Ulcer in case of thrombo-angiitis obliterans treated for eight years by almost every known method, including intravenous hypertonic saline solution, bed care, baking, diathermy, ultraviolet ray exposure, typhoid vaccine and skin grafts: A, before and B eight weeks after intermittent venous occlusion; completely healed.

venous occlusion was then applied. At the end of twelve hours of treatment, the patient began to notice some relief of pain. Within five days he was able to sleep without the use of any narcotic or sedative. In eight weeks the ulcer completely healed (fig. 2).

Relief of pain in less than twenty-four hours has been noticed in all the other cases of thrombo-angiitis

obliterans. Granulation tissue appeared in the ulcers, which showed evidence of ability to heal far better than with any other method with which we had previously had any experience. A summary of the cases is seen in table 5. Detailed summaries of results regarding pain relief appear in table 2, healing of ulcers in table 3 and increase in walking ability in table 4.

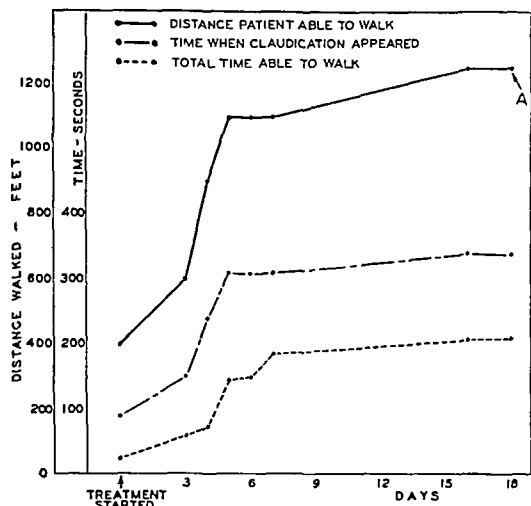


Fig. 3.—Improvement in walking ability in case of arteriosclerosis with intermittent claudication. A, ceased walking because of dyspnea.

#### ARTERIOSCLEROSIS OBLITERANS

The degenerative forms of arterial disease recognized as arteriosclerosis are much more common than thrombo-angiitis obliterans. Arterial obstruction occurring in later life is manifested in the nondiabetic patient by disturbance in vascular capacity, with resultant intermittent claudication. The same phenomenon in the diabetic patient is curiously followed by trophic changes in the skin, rapid and progressive infection, and ul-

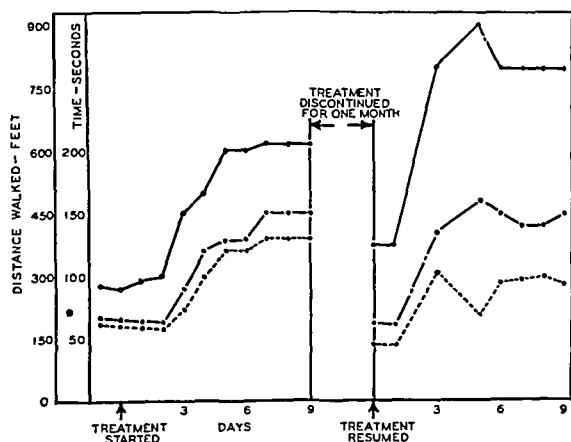


Fig. 4.—Improvement in walking ability in case of arteriosclerosis with intermittent claudication.

mately gangrene. This is borne out by our own records (table 1). Although the diabetic suffered in a slightly larger proportion than the nondiabetic, the incidence of gangrene or ulcer was in the proportion of twelve to one.

This serious problem in later life thus becomes concerned with the relief of claudication in the nondiabetic, while it becomes one of restoring tissues and aiding

healing in the diabetic. It is common knowledge that the last group of cases represent a class for which the physician has been able to do the least good and has been solved in the majority of cases by performing midhigh amputations. As a group, however, they present vessels which are hard, unwieldy, frequently calcified, with little collateral flow, and, when complicated by a diabetic state, become markedly susceptible to rapid, spreading infection with profound death of tissue.

All previous methods of treatment, whether by physical therapy, suction and pressure, tissue extract, hypertonic saline solution or typhoid vaccine have been admitted to fail notoriously in this group. Our experience with intermittent venous occlusion has included twenty-three cases in this class of disease, thirteen of which were diabetic and ten nondiabetic (table 1). In the summary of our results (table 5) one can observe a rather encouraging picture. The details of effect on the relief of rest pain is seen in table 2. Of twenty-three cases, including all types of arteriosclerosis obliterans, with or without gangrene, complete relief of

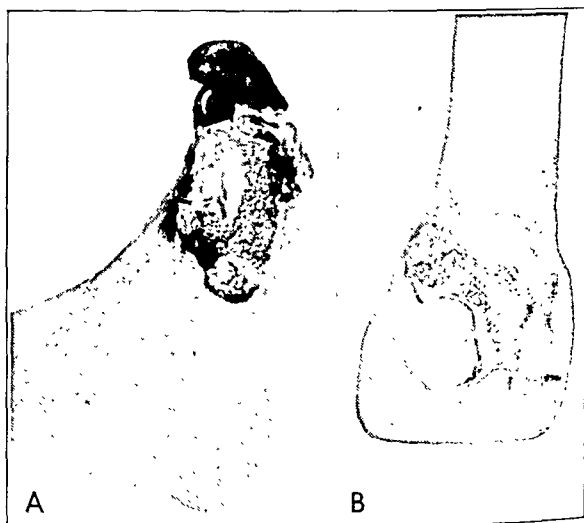


Fig. 5.—Diabetic gangrene of four months' duration: A, foot edematous, lesion foul, lymphangitic streaks present, febrile, oscillometric readings absent up to knee; B, after four months' treatment—spontaneous amputation, healthy granulation tissue, and adequate epithelization.

pain was obtained in seventeen, partial relief in five and no relief in two. It is interesting to note that, when pain relief occurred, it was apparent in from two to forty-eight hours. We believe that this presents a better result than has been obtained with any other previous method.

With regard to the question of gangrene, we must confess a number of failures. We believe that frank gangrene in two cases of diabetes was made definitely worse by our treatment and hastened amputation. We were, however, encouraged to find four cases that healed and five others that were healing at the time of this writing. These are cases in which there is profound arterial obstruction that we feel would have become progressively worse under our previous methods of approach.

One of the most striking results was in the group of arteriosclerosis with intermittent claudication. The marked increase in vascular capacity that enabled these patients uniformly to improve their walking ability markedly is seen in figures 3 and 4.

TABLE 2.—Summary of Results of Treatment with Intermittent Venous Occlusion for Relief of Pain

	Number of Cases	Pain Completely Relieved	Pain Partially Relieved	No Relief
Thrombo-angitis obliterans.....	5	4	1*	0
Arteriosclerosis obliterans (diabetic)				
(a) Without ulcer.....	1	1	0	0
(b) With ulcer or gangrene.....	12	8	3	1
Arteriosclerosis obliterans (nondiabetic)				
(a) Without ulcer.....	9	7	2	0
(b) With gangrene.....	1	0	0	1
Frost bite with gangrene.....	1	1	0	0
Total.....	29	21	6	2

\* Patient refused to discontinue smoking and was discharged from the hospital.

TABLE 3.—Summary of Results of Treatment with Intermittent Venous Occlusion; Healing of Ulcers and Gangrene

HEALING OF ULCERS AND GANGRENE IN ARTERIO-SCLEROSIS OBLITERANS (DIABETIC)				
Case	Character of Lesion	Duration	Course	Effect
1	Gangrene of right heel	1 year	Chronic	Lesion spread after 3 days of treatment; midleg amputation; died
2	Gangrene of left heel	1 year	Chronic	Two days of treatment; spread of lesion; mid-thigh amputation; healed in 3 weeks
3	Three ulcers on right foot	3 months	Chronic	Two ulcers healed; one ulcer improved
4	Ulcer on dorsum of right foot	6 weeks	Chronic	Midleg amputation; died
5	Gangrene of all toes of left foot	4 months	Acute	Spontaneous amputation of toes; ulcer healed; subsequent osteomyelitis and local amputation
6	Three ulcers on right foot	4 weeks	Acute	Healed
7	Gangrene of right large toe	4 months	Acute	Incision and drainage; healing
8	Ulcer on dorsum of right great toe	6 weeks	Chronic	Healing
9	Gangrene of right 5th toe and plantar surface	8 weeks	Chronic	Healed in 6 weeks
10	Gangrene of right 2d toe	6 months	Chronic	Amputation of toe; stump healed in 2 weeks
11	Ulcer over right metatarsophalangeal joint, 3/4 inch in diameter	7 months	Chronic	Healed in 2 weeks
12	Ulcer of right leg	5 weeks	Subacute	Healed in 2 weeks
Summary				
Total Cases	12	Healed	4	Improved
				5
				Failures
				3
HEALING OF ULCERS AND GANGRENE IN ARTERIO-SCLEROSIS OBLITERANS (NONDIABETIC)				
1	Gangrene of left large toe	8 weeks	Acute	Midhigh amputation; died; gas gangrene; failure
HEALING OF ULCERS AND GANGRENE IN THROMBO-ANGITIS OBLITERANS				
1	Progressive gangrene of entire right foot	3 years	Chronic	Amputation of gangrenous slough; stump healed
2	Ulcer on dorsum of 4th left toe	3 months	Chronic	Healed in 9 days
3	Ulcer of 4th right toe	3 years	Chronic	Improved
4	Ulcer of entire dorsum of left foot	8 years	Chronic	Completely healed in 8 weeks
5	Ulcer of right ankle	6 months	Chronic	Healed in 4 weeks
Summary				
Total Cases	5	Healed	4	Improved
				1
				Failures
				0

COMMENT

Our experience with the use of intermittent venous occlusion extends over a period of a year and a half. We have observed that those patients suffering from organic arterial occlusion without ulcer or gangrene derived the greatest degree of relief and produced the best results when the pressure was applied at levels of from 80 to 90 mm. of mercury for as much as twelve hours a day. After two weeks of continuous treatment of this character, they would subsequently return for treatment for periods of two hours three to four times a week.

We have found that it is necessary to continue these interval treatments in cases of arteriosclerosis obliterans. The patients themselves voluntarily return for these treatments, for they themselves have found that if treatment is interrupted for two weeks their symptoms have a tendency to return. In figure 4 one will observe a reduction in vascular capacity after cessation of treatment for one month with the subsequent improvement on the resumption of treatment.

TABLE 4.—Summary of Results of Treatment with Intermittent Venous Occlusion; Effect on Walking Capacity and Intermittent Claudication

	Before Treatment (Feet)	After Treatment (Feet)	Duration of Treatment
Thrombo-angitis obliterans.....	100	1,000	4 weeks
Arteriosclerosis obliterans (nondiabetic)			
Patient 1.....	400	1,250	4 weeks
2.....	250	920	2 weeks
3.....	510	940	3 weeks
4.....	400	820	2 weeks
Arteriosclerosis obliterans (diabetic).....	600	2,350	3 weeks

The walking rate was 11 paces in each five seconds.

In the cases showing evidence of ulcer or gangrene we have been able to obtain the greatest amount of relief by maintaining a pressure of from 40 to 50 mm. of mercury for periods of one hour alternating with one hour of rest during the waking hours. In some of these cases we found that if treatment was given continuously there developed a slight edema of the foot, which would disappear after the discontinuance of treatment for a day.

We have in some cases observed after two to three weeks of treatment that there occurred visible traces of an arterial pulse in the oscillometer which had been previously totally absent.

We have found the venous filling test, which we described recently,<sup>4</sup> an excellent criterion for determining quantitatively any change in vascular capacity. The test is performed by elevating the feet above the level of the head and moving the toes until the foot is blanched and the veins are collapsed. On placing the feet in the dependent position, the time is noted that it takes the veins on the dorsum of the foot to fill with blood. Since the lunar valves in the veins prevent a reflux of blood into the peripheral circulation, whatever blood enters the veins of the dorsum of the foot must obviously come from the arteries and through the capillaries. We have found that the normal venous filling time is from eight to ten seconds. In pathologic states

4. Collens, W. S., and Wilensky, N. D.: Two Quantitative Tests of Peripheral Vascular Obstruction, *Am. J. Surg.* 34:71 (Oct.) 1936.

TABLE 5.—Summary of Cases

Number, Name, Age, Sex, Race	Diagnosis	Condition	Duration of Illness	Rest Pain	Vascular Capacity			Claud. Time, Sec.†	Previous Treatment	Int. Ven. Occlusion	Operation	Result
					Oscillometric Readings	V.F.T. Sec.*						
1 S. P. 44 ♂ Jewish	Thrombo- angitis obliterans	Ulcer of right ankle; migrat- ing phlebitis	1½ years	++++	Thigh 3 Popl. tr Ankle 0	37	55		Baking; Buerger exercise; rest	4 weeks	None	Pain disappeared in 24 hours; ulcer healed in 4 weeks; oscillometric readings improved
2 M. M. 27 ♂ Jewish	Thrombo- angitis obliterans	Ulcer 4" toe of left foot; migrating phlebitis	3 months	++++	Thigh R 5 Popl. 5 Ankle 3½ D.P. 1 0	33	..		Rest; baking; diathermy	9 days	None	Ulcer healed
3 P. N. 39 ♂ Jewish	Thrombo- angitis obliterans	Ulcer, dorsum of left foot, 3 in. diameter	13 years	++++	Thigh ½ Popl. ¼ Ankle 0	40		Bed patient	Hypertonic saline, 7 yrs. typhoid vaccine peripheral N. section; ultra- violet exposures; diathermy	7 weeks	None	Ulcer healed; oscillometric readings improved
4 W. H. 31 ♂ Jewish	Thrombo- angitis obliterans	Gangrene of entire right foot	3 years	++++	Thigh ½ Popl. ¼ Ankle 0	42		Bed patient	Rest; baking; hypertonic saline intra- venously; typhoid tis- sue extract	2 weeks	Amputa- tion 2 inches above ankle	Stump healed by primary union; amputation of gangrenous slough
5 S. E. 46 ♂ Jewish	Thrombo- angitis obliterans	Migrating phlebitis; ulcer 4" on right toe	.....	++++	Thigh 5 Popl. 4 Ankle 0	34	25		None	1 week	None	Pain relieved in 24 hours; claud. time improved to 60 seconds; dis- charged because refused to cease smoking
6 H. K. 61 ♂ Jewish	Arterio- sclerosis	Claudication on walking; rest pain	10 years	++	Thigh R ¾ Popl. 1½ Ankle 1 D.P. 0 ¼	R 36 L 22	25		Diathermy; citrate intra- venously	5 weeks	None	Claud. time rose to 340 seconds; disappearance of rest pain
7 D. C. 63 ♂ Jewish	Arterio- sclerosis	Claudication on walking; right leg	1 year	On walking	Thigh R 2 Popl. 1½ Ankle ¼ D.P. 0 ½	R 25 L 18	45		Hypertonic saline; diathermy	4 weeks	None	Claud. time rose to 100 seconds
8 F. S. 64 ♂ Jewish	Arterio- sclerosis	Claudication on walking; right leg	5 months	On walking	Thigh R ¾ Popl. 1 Ankle 0 D.P. 0 0	R 22 L 12	70		Baking	3 weeks	None	Claud. time rose to 130 seconds
9 P. P. 69 ♂ Jewish	Arterio- sclerosis	Severe rest pain of left leg; right leg amputated 3 years ago	10 years	++++	Thigh 0 Popl. 0 Ankle 0 D.P. 0 0	23	..		Codeine and morphine for pain relief	4 weeks	None	V.F.T. reduced to 13 seconds; pain relieved; stopped using sedatives in 4 days
10 B. K. 32 ♂ Jewish	Arterio- sclerosis; diabetes	Gangrenous ulcer of right foot, 5th toe and plantar surface	8 weeks	+++	.....	..	..		Rest; baking; wet dressings	6 weeks	None	Ulcer completely healed; pain disappeared
11 D. B. 63 ♂ Jewish	Arterio- sclerosis	Intermittent claudication; pain on resting right leg	6 years	+++	.....	R 30 L 20	..		Baking	1 week	None	V.F.T. dropped to R 20 seconds, L 10 seconds; rest pain disappeared
12 M. L. 76 ♂ Jewish	Arterio- sclerosis	Intermittent claudication	2 years	None	Thigh R 0 Popl. ¼ Ankle ¼ D.P. 0 0	R 25 L 12	60		None	2 weeks	None	Stopped walking in 95 seconds because of onset of precordial pain
13 S. K. 75 ♀ Jewish	Arterio- sclerosis	Intermittent claudication; rest pain	10 years	++++	Thigh R 1 Popl. 1½ Ankle tr ¼ D.P. 0 tr	R 25 L 7	..		Hypertonic saline	1 week	None	Relief of rest pain within 24 hours
14 A. W. 58 ♂ Jewish	Arterio- sclerosis; diabetes	Ulcer of the right foot	7 months	++	Thigh R ½ Popl. 1 Ankle tr D.P. 0 0	R 28 L 15	In bed		Wet dress- ings; baking; rest	2 weeks	None	Ulcer healed
15 A. L. 65 ♀ Jewish	Arterio- sclerosis; diabetes	Ulcer dorsum of right great toe	6 weeks	++++	Thigh R ½ Popl. tr ¼ Ankle 0 tr D.P. 0 0	R 40 L 10	In bed		Rest; baking	3 weeks	None	Return of sensa- tion in all toes; rest pain dis- appearing; ulcer healing
16 A. H. 68 ♀ Jewish	Arterio- sclerosis; diabetes	Gangrene of the right heel	1 year	++++	Thigh R ½ Popl. 2 Ankle 1 D.P. 0 0	R 30 L 17	In bed		Rest; baking	3 days	Amputa- tion midleg	Thrombophle- bitis followed treatment; rapid spread of gan- grene; died of cardiac failure and sepsis 1 week after operation

\* V.F.T. means venous filling time. Normal = 8-10 seconds. (See text.)

† Claud. time means claudication time. This test is performed by having the patient walk at the rate of 11 paces in five seconds, which represents maximum speed of walking and is just short of the running gait. The figures in the table indicate the time of onset of claudication.

TABLE 5.—Summary of Cases—Continued

Number, Name, Age, Sex, Race	Diagnosis	Condition	Duration of Illness	Rest Pain	Vascular Capacity			Previous Treatment	Int. Ven. Occlusion	Opera- tion	Result
					Oscillometric Readings	V.F.T. Sec.*	Claud. Time, Sec.†				
17 M. K. 63 ♀ Jewish	Arterio- sclerosis; diabetes	Gangrenous ulcers, right foot, lateral surface, large toe, heel	3 months	+++	R L Thigh ½ 3 Popl. 0 2 Ankle 0 ½ D.P. 0 tr	R 38 L 10	In bed	Rest; baking	6 weeks	None	Two ulcers healed; one ulcer improved; pain relieved
18 J. F. 53 ♂ Irish	Arterio- sclerosis; diabetes	Gangrene of right 2d toe	6 months	+++	R L Thigh tr 0 Popl. 0 0 Ankle 0 0 D.P. 0 0	R 40 L 25	55	Hypertonic saline; baking; diathermy; bed rest	1 month	Amputa- tion of toe	Claud. time rose to 210 seconds; stump healed in 2 weeks
19 F. K. 60 ♀ Jewish	Arterio- sclerosis; diabetes	Ulcer of the dorsum of the right foot	6 weeks	++++	R L Thigh ½ 3 Popl. 0 1½ Ankle 0 0 D.P. 0 0	R 35 L 15	In bed	Rest; baking; wet dress- ings	2 weeks	Midleg amputa- tion	Death resulting from gas bacillus infection
20 B. S. 57 ♂ Jewish	Arterio- sclerosis; diabetes	Intermittent claudication; gangrene of all the toes of the left foot	20 years, 4 months	++++	R L Thigh 1 tr Popl. 0 0 Ankle 0 0 D.P. 0 0	R 24 L 35	In bed	Rest; baking; wet dress- ings	8 weeks	Amputa- tion midleg	Spontaneous amputation of toes; 6 weeks later a spreading infection necessi- tated amputa- tion; healed by primary union
21 L. T. 68 ♀ Jewish	Arterio- sclerosis; diabetes	Gangrene of heel of the left foot	1 year	++++	R L Thigh 2½ ½ Popl. 2½ 0 Ankle ½ 0 D.P. tr 0	R 20 L 26	In bed	Rest; baking	2 days	Amputa- tion midhigh	Infection spread in 2 days after treatment; high amputation healed in 3 weeks
22 A. W. 77 ♀ Jewish	Arterio- sclerosis; diabetes	Three ulcers of the right foot	4 weeks	+++	R L Thigh ½ 20 Popl. 0 ½ Ankle 0 tr D.P. 0 0	R 32 L 17	In bed	In bed; baking	2 weeks	None	Ulcers healed; pain relieved; V.F.T. improved, R. 24, L. 12
23 H. G. 50 ♂ Jewish	Arterio- sclerosis; diabetes	Gangrene of right large toe and spreading infection of leg	4 months	++	R L Thigh 3½ 5 Popl. ¾ 2½ Ankle ¼ ¾ D.P. 0 ¼	R 18 L 10	In bed	Wet dress- ings; baking; bed rest	8 weeks	Incision and drain- age	Pain relieved in 24 hours; improved oscillo- metric readings; infection improving
24 Y. S. 63 ♀ Jewish	Arterio- sclerosis; diabetes	Intermittent claudication; rest pain	3 months	++	R L Thigh 2½ 2 Popl. ½ ¾ Ankle 0 ¼ D.P. 0 0	R 15 L 12	..	None	2 weeks	None	Pain relieved
25 S. B. 73 ♂ Jewish	Arterio- sclerosis; diabetes	Ulcer of the right leg	5 weeks	+	R L Thigh 5 4 Popl. 3½ 1 Ankle 1 tr D.P. ½ 0	.....	In bed	Rest; baking	2 weeks	None	Ulcer completely healed
26 B. S. 52 ♂ Irish	Arterio- sclerosis	Frost bite; gangrene of all the toes of the right foot	4 weeks	++	R L Thigh 8 9 Popl. 7 7 Ankle 3½ 3½ D.P. 0 ½	R 10 L 10	In bed	Baking; bed rest	2 weeks	None	Pain relieved in 24 hours; sponta- neous amputa- tion; healing granular ulcer
27 S. N. 62 ♂ Jewish	Arterio- sclerosis	Frost bite; ulcer of left great toe	8 weeks	++++	R L Thigh 9 0 Popl. 7 0 Ankle 5 0 D.P. 1½ 0	R 10 L 53	In bed	Acetyl- cholinc; bed rest; baking	1 week	Amputa- tion	Relief of pain; midhigh amputa- tion for spread- ing infection; died of gas bacil- lus infection
28 D. F. 76 ♂ Jewish	Arterio- sclerosis	Intermittent claudication	6 months	++++	R L Thigh 1½ 2 Popl. ¾ 1½ Ankle tr 1 D.P. 0 ½	R 26 L 24	In bed	Baking; diathermy	1 week	None	Pain relieved in 2 days
29 R. S. 51 ♀ Jewish	Arterio- sclerosis	Intermittent claudication; rest pain	3 years	++++	R L Thigh 3 1 Popl. 1 ¼ Ankle ¼ tr D.P. tr 0	R 10 L 54	In bed	Hypertonic saline; typhoid	1 week	None	Pain relieved in 12 hours

the delay in venous filling is directly proportional to the degree of vascular obstruction. We have seen in some cases a marked degree of improvement in the venous filling time after the institution of our treatment.

In experimental studies of the effect of intermittent venous occlusion in normal extremities we have seen a rise in skin temperature of as much as 3 degrees F. after one hour of treatment. In one case of arterio-sclerosis obliterans the temperature rose as much as 4 degrees F.

Of all the ulcers that have healed in our series, not one has subsequently broken down.

#### CONCLUSIONS

1. A new method of treating peripheral obliterative arterial disease by the use of intermittent venous occlusion has been developed.

2. In twenty-nine unselected cases this method of treatment was capable of relieving pain, healing ulcers and increasing walking capacity.

3. Our experience shows that the physiologic observations of Lewis and Grant in the normal are basically sound in their application to the treatment of peripheral vascular disease.

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## Clinical Notes, Suggestions and New Instruments

### A CASE OF INFANTILE ADIPOSIS TREATED WITH THYROID

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S. E., a girl, weighed 3.9 Kg. at birth after an uncomplicated delivery and appeared normal. The child was breast fed for several months after birth and received orange juice daily but no added source of vitamin D. Teething began at the age of 6 months. The mother noticed that, starting at the age of 7 months, the infant gained weight very rapidly, until it was brought to the Pediatrics Clinic, Jan. 17, 1933, at the age of 13 months with the complaint of extreme obesity. The infant had experienced no illness up to that time, and its behavior had appeared normal to the parents. There was no history of tuberculosis, syphilis, diabetes or thyroid or pituitary dysfunctions in the family. A brother, born a year later, and an older sister, aged 11 years, were normal.

Beyond the marked adiposity (the weight was 15 Kg. as compared to the normal average of 9.1 Kg., fig. 1A), the only abnormalities reported were a reddened skin, a thrush infection and carious teeth. A specimen of the urine was negative for sugar, and a roentgenogram of the skull revealed no abnormalities. Whole dried pituitary (65 mg. twice daily) and fortified halibut liver oil were administered for two months, when the pituitary was discontinued and thyroid (30 mg. three times daily) given for three weeks (fig. 1B). The weight steadily increased throughout this treatment until the patient weighed 17.3 Kg. May 29 (fig. 1C), when whole pituitary (65 mg. three times daily) was again given for a period of several months. Calcium lactate was likewise prescribed because of her very carious teeth. Vitamin D was not given constantly because the patient refused cod liver oil, and it was impossible at that time to obtain a constant supply of the more concentrated preparations because of the expense.

October 12 the patient was transferred to the Endocrine Clinic. At this time, at the age of 22 months, she weighed 17.5 Kg. (fig. 1D) and presented an extremely grotesque

none in the axillae or about the genitalia. The skin was dry and thick, and the cheeks were very red. A small umbilical hernia was present.

The appetite was poor, the total food intake being rather below average. Constipation, but no polydipsia or polyuria, was present. Roentgenograms revealed an apparent enlargement of the thymus and a markedly deficient ossification of the bones of the wrist and foot.

Her physical measurements, which indicate that there was a marked deficiency of stature, are given in table 1.

These observations led us to postulate a pluriglandular disturbance, for such extreme adiposity is not typical of hypothyroidism alone but suggests the obesity resulting from injuries to the pituitary or hypothalamus. A dysfunction of the adrenal cortex was considered but dismissed as improbable because of the lack of development of the secondary sex characteristics, such as pubic hair.

However, because of the paucity of evidence in the literature on the efficacy of desiccated pituitary by mouth, and because of the previous failure of this substance to reduce the patient's weight (fig. 1A-B,C-D), we determined to use desiccated thyroid, which had previously been administered for a period

TABLE 1.—Physical Measurements at 22 Months

	Patient's	Normal
Vertex to symphysis.....	40.6 cm.	49.5 cm.
Symphysis to sole.....	31.8 cm.	33.5 cm.
Total length.....	72.4 cm.	83.3 cm.
Circumference of head.....	45.0 cm.	48.0 cm.
Chest.....	60.0 cm.	48.0 cm.
Abdomen.....	63.0 cm.	
Hips.....	63.0 cm.	

of but three weeks (fig. 1B). Dried thyroid (30 mg. four times daily) was therefore prescribed, as well as calcium lactate (0.3 Gm. three times daily) and halibut liver oil for the deficient calcification. We did not consider that the "apparently enlarged" thymus need be considered, since it was not producing any mechanical obstruction.

Two weeks later the weight had increased to 17.7 Kg., but the mother reported that the child's mental alertness had greatly increased and that she was attempting to talk for the first time. Because of the slight gain in weight, the thyroid dosage was increased to 30 mg. five times daily. Under this regimen the weight fell rapidly to 16.5 Kg. December 7 (fig. 1D-E). The child no longer cried continuously when brought to the clinic as formerly and seemed much more alert. Its appetite was still poor and considerable constipation remained. The calcium and fish liver oil were continued.

Unfortunately an attack of bronchopneumonia occurred Jan. 7, 1934 (fig. 1E), requiring two weeks of hospitalization. Thyroid therapy was discontinued during this period but was resumed thereafter. Because of the inclement weather the child was seen only at home, where she could not be weighed, until she was again brought to the clinic, March 15, when she weighed 15.2 Kg. (fig. 1F). Her condition was quite satisfactory, although she was still obese. The thyroid was continued (30 mg. four times daily) with calcium and fish liver oil.

The weight now remained stationary at about 15 Kg. May 10 (fig. 1G) she showed marked improvement in appearance, the bizarre facial distortion, as well as the redness of the face, having disappeared.

An attempt was made to substitute thyroxine (0.8 mg. once daily) for the desiccated thyroid, but the child became irritable and nauseated within a few days, so that thyroid was resumed (30 mg. five times daily).

December 13 (fig. 1H) the weight had diminished to 12.9 Kg. Roentgenograms of the hands and feet indicated that the bone age was now normal, but the general transparency of the bones suggested a deficiency in calcium.

Thyroid therapy was discontinued in April 1935 (fig. 1I) because of the failure of the parents to bring the child to the clinic until June 27 (fig. 1J), at which time the weight was 13 Kg. (normal 14.2 Kg.) and the height 80 cm. (normal 95 cm.) at the age of 3½ years, indicating that a marked deficiency of stature was responsible for the child being now underweight. The mentality and behavior appeared normal. Since the teeth were in such poor condition, calcium and vitamin D were continued. Thyroid was not prescribed, since

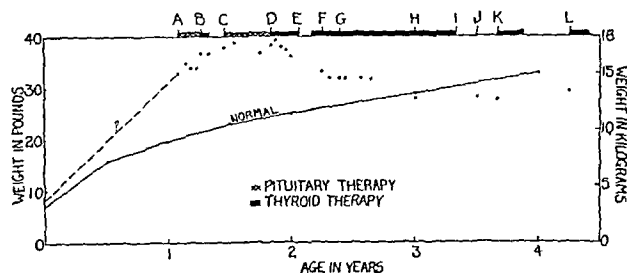


Fig. 1.—Dots indicate the stripped weight of the patient in pounds plotted to age. Solid line shows growth of the average female child (after U. S. Children's Bureau). The weight of our patient falls below normal at the end because of small stature. Hatched horizontal blocks indicate administration of whole pituitary by mouth and solid horizontal blocks indicate thyroid therapy. A, Jan. 17, 1933: weight, 15 Kg.; aged 13 months; patient entered clinic and was given whole pituitary by mouth. B, March 21: weight 16.8 Kg.; pituitary discontinued and thyroid given for three weeks. C, May 29: weight 17.3 Kg.; figure 2 was made; whole pituitary resumed. D, October 12: weight 17.5 Kg.; pituitary therapy discontinued and thyroid administered. E, Jan. 7, 1934: attack of pneumonia; thyroid discontinued for three weeks. F, March 15: weight 15.2 Kg. G, May 10: weight 15 Kg. H, December 13: weight 12.9 Kg.; thyroid reduced to 30 mg. three times daily. I, April 1935: thyroid discontinued by parents. J, June 27: weight 13 Kg.; no thyroid. K, August 29: weight 12.7 Kg.; figure 4 was made; thyroid (30 mg. three times daily) administered for five weeks and again discontinued by parents. L, March 12, 1936: weight 13.4 Kg.; intelligence tests made; thyroid (30 mg. two times daily) again prescribed.

appearance because of her distorted face and marked obesity (fig. 2). The facial deformation by fat was such as to prevent the patient from closing her mouth, and the upper anterior teeth were almost completely destroyed by caries. There was a noticeable hirsutism of the face, back, arms and legs but

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the parents were not able to bring the child to the clinic regularly. The texture of the skin was quite normal and the hirsutism had disappeared.

The patient was next seen August 29, when figure 3 was made (fig. 1K). Thyroid (30 mg. two times daily) was again prescribed for a month because the deficient height, protruding abdomen and umbilical hernia were suggestive of cretinism. Unfortunately the parents were so well satisfied with the child's improvement that they did not trouble to return her to the clinic until March 12, 1936 (fig. 1L). Her physical measurements at this time, at the age of 4 years and 3 months, are given in table 2.

TABLE 2.—Physical Measurements at the Age of 4 Years and 3 Months

	Patient's	Normal
Vertex to symphysis.....	49 cm.	56 cm.
Symphysis to sole.....	37 cm.	44 cm.
Total.....	86 cm.	100 cm.
Weight.....	13.4 Kg.	15.5 Kg.

This indicated that the child was growing slowly, although she was still 14 cm. under normal height. Her dentition was normal except for failure of eruption of the upper second deciduous molars on both sides. The teeth were carious and deeply pigmented.

She appeared alert and cooperative but did not always voluntarily control her urination, although the latter may well have been due to poor training. The mother reported that the child slept normally and did not suffer from constipation.



Fig. 2.—Appearance of the patient May 29, 1933, at the age of 1 year and 5 months, weighing 17.3 Kg., before continuous thyroid therapy was instituted. The distortion of the face by fat made it impossible for the patient to close her mouth and narrowed the palpebral fissures. The ruddy cheeks are noticeable.

Application of the Stanford-Binet and Gesell tests revealed that there was a definite retardation in mental development, with both mentality and behavior falling between the 2 and 3 year levels, although the actual age was 4 years and 3 months.

Because both physical and mental stigmas strongly suggested cretinism, thyroid medication was begun again (30 mg. two times daily) with the idea that it will probably need to be administered for a period of years. The fish liver oil is also being continued.

COMMENT

We do not believe that adiposity in this case could have been due to exogenous causes, for the appetite had always been poor and the child had been breast fed for only a few months.

We consider that the condition was caused

by a pluriglandular dysfunction, probably involving at least the pituitary and thyroid glands. The thyroid itself could not alone be responsible, for even cretins do not show such marked obesity, nor did the appearance of the patient at first suggest cretinism. However, the thick dry skin and delayed ossification may well have been due to a thyroid deficiency, especially since they were so markedly alleviated by treatment with thyroid. Obesity due to pituitary dysfunction or hypothalamic

lesions is well known, however, and strongly suggests that some such syndrome was concerned in our case.

We have no explanation for the sudden development of this condition at the age of 7 months, since there was no record of cranial injury at any time nor of any previous illness. Development of a brain tumor seemed unlikely because of the absence of gross signs of increased intracranial pressure, such as headaches, vomiting and convulsions.

Photographs of other obese infants usually do not show the peculiar distortion of the face by fat as in our case. However, a case of thymic hyperplasia and suspected adrenal cortex dysfunction reported by Engelbach<sup>1</sup> resembled our case to some extent, although that patient at the age of 4 years had premature development of pubic hair not found in ours. Guthrie and Emery<sup>2</sup> also report a somewhat similar case of "precocious obesity" but with hirsutism, which presented neither grossly abnormal adrenals nor brain tumor at necropsy. Had our case remained untreated, precocious secondary sex characteristics might have developed later.

The loss in weight and general improvement of the patient under continuous thyroid therapy was gratifying although surprising in view of the undoubted pluriglandular syndrome present. The results serve to corroborate our primary diagnosis of a pituitary-thyroid dysfunction, for it is not likely that a tumor of the adrenal cortex would have been benefited by the treatment used.

The disturbance of calcium metabolism, as indicated by the very carious teeth and relatively transparent bones, in spite of fairly adequate calcium and vitamin D therapy, may indicate an overactivity of the parathyroid glands. The short stature, 14 cm. below normal at the age of 4 years, may be due either to deficient thyroid secretion or to pituitary growth hormone.

Our patient's obesity is exceeded by many reported cases. Hempleman<sup>3</sup> records one child weighing 42 pounds (19 Kg.) at 6 months, another 34 pounds (15.4 Kg.) at 7 months, and a third 46 pounds (21 Kg.) at 16 months. Talbot's<sup>4</sup> patient weighed over 54 pounds (24.5 Kg.) at 2 years 9 months and, like ours, showed no appreciable response to desiccated pituitary, but apparently thyroid was not given and it continued to gain weight. It is noteworthy that dried whole pituitary by mouth (fig. 1, A-B, C-D) also failed to diminish the weight of our patient.

SUMMARY

An infant had extreme obesity developing at the age of 7 months, with rapid increase in weight up to 17.5 Kg. at the age of 1 year and 10 months. Continued thyroid therapy produced a marked loss of weight and noticeable improvement in mentality and behavior, as compared to apparent failure of desiccated whole pituitary therapy.

116 East Franklin Street.

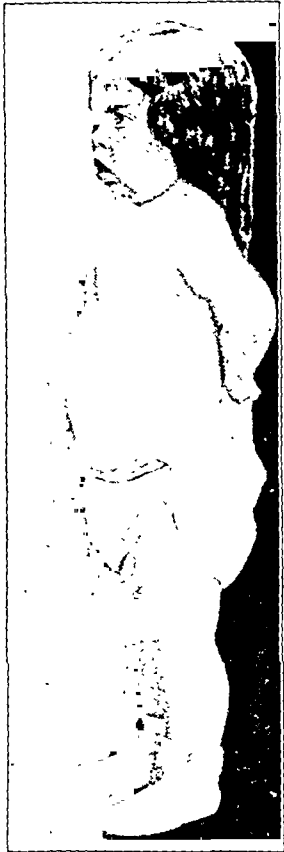


Fig. 3.—Appearance of the patient Aug. 29, 1935, aged 3 years and 8 months, weighing 12.7 Kg. The height is 14 cm. below normal. Note protruding abdomen and slight umbilical hernia.

1. Engelbach, William: Endocrine Medicine, Baltimore, Charles C. Thomas 2: 416, 1932.

2. Guthrie, L., and Emery, W.: Precocious Obesity, Premature Sexual and Physical Development, and Hirsuties in Relation to Hypernephroma and Other Morbid Conditions, Tr. Clin. Soc. London 40: 190, 1907.

3. Hempleman, in Abt's Pediatrics, Philadelphia, W. B. Saunders Company 2: 842, 1923.

4. Talbot, F. B.: Clinical Pediatrics, New York, D. Appleton & Co. 13: 75, 1928.

A SPLINT TO MAINTAIN ROTATION IN THE  
LOWER EXTREMITY

A. M. RECHTMAN, M.D., PHILADELPHIA

A splint that I first saw used by my late colleague and friend Dr. William Jackson Merrill, during the 1932 poliomyelitis epidemic in Philadelphia, is here described. It serves to aid in maintaining the lower extremities of bed patients in



Fig. 1.—Front view of splint.

any desired degree of rotation. A circular plaster is applied from the toes to the knee or higher. A board or two thicknesses of basswood, about 3 inches wide and 10 inches long, is fastened with another plaster bandage to the under surface of the plaster, proximal to the heel. The board should be in the same plane as the bed when the patient is recumbent. The plaster may be bivalved and the lower portion used as a removable splint.

If it is desired to maintain the extremity in an attitude of outward rotation, the longer arm of the board should be fitted to extend well to the inner side of the plaster and vice versa.

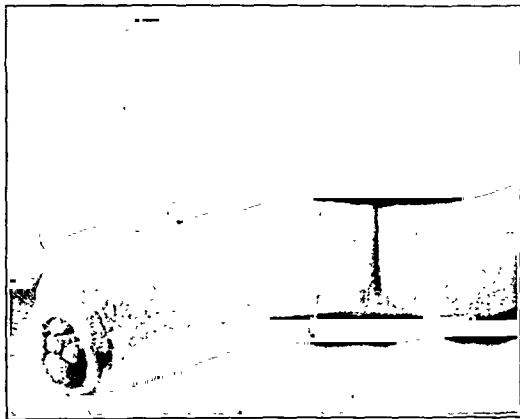


Fig. 2.—Side view of splint.

This will aid in better balancing the extremity and maintaining the correction. The board may be centered beneath the plaster if the neutral position is desired.

The illustrations show the splint applied to the foot and leg of a boy, aged 3½ years, who had a congenital deformity of the hip with soft tissue contractions holding the extremity in an attitude of 90 degrees of external rotation. The deformity was corrected at operation by a subperiosteal stripping of the soft tissues and capsule from the trochanters and femoral neck through a posterior incision (Burman procedure). A plaster

spica was worn for four weeks. When the plaster was removed the extremity was tender and painful on motion. The splint here described was applied and it efficiently maintained the extremity in an attitude of 15 degrees of internal rotation until the soreness disappeared and passive manipulation and active exercise could be instituted without causing pain.

A few indications for the use of the splint are: 1. To maintain the desired degree of rotation in the lower extremities during the period of bed treatment for poliomyelitis. 2. As a postoperative dressing for the lower extremities of patients who have had poliomyelitis. 3. In the treatment of patients with congenital and acquired deformities and in conjunction with many fracture dressings of the lower extremities. In short, it may be incorporated in any plaster dressing of the lower extremity when it is desired to hold the part in a particular degree of rotation.

The advantages of this splint are that a lower extremity may be maintained in any degree of rotation without application of

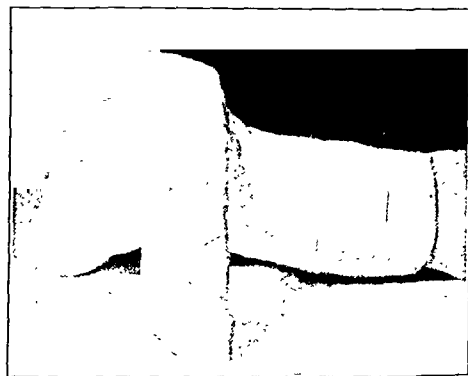


Fig. 3.—Top view of splint.

a spica dressing; the pelvis, hip and thigh may be exposed for treatment with physical therapy and wounds may be more easily dressed. The use of uncomfortable and inefficient sand bags may be eliminated.

1715 Pine Street.

**Council on Physical Therapy**

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT. HOWARD A. CARTER, Secretary.

**BURDICK TRIPLEX UNIT, SWD-10,  
ACCEPTABLE**

Manufacturer: The Burdick Corporation, Milton, Wis.

This apparatus is a short wave diathermy machine designed for medical and surgical diathermy. Medical diathermy may be applied either by electric field or by electromagnetic field.

The short wave 15 meter circuit is designed for the application of medical diathermy to localized areas, by means of electric field cuffs and pads.

The 25 meter circuit is designed to produce therapeutic heat in the body tissues by electromagnetic induction. Application of the current is accomplished by means of a cable and may be used for heating in localized areas and for the production of therapeutic fever.

The 70 meter long wave circuit is designed for use in electro-surgery—cutting and coagulation—and for official diathermy application with metal electrodes in contact.

The circuit is the well known push-pull type radiofrequency oscillator, modified in design so that the tubes can be switched to the different type circuits. The unit uses two oscillator tubes. The power transformer is furnished with two balanced secondary coils and five line voltage taps. A separate transformer is provided with the filaments. Figure 2 is a diagram of the circuit.

When this machine is operated under full load it draws not more than 1,000 watts from the line. Since no reliable method has been proposed to measure the output of energy available to the patient, this value is not given.

From the orthopedic service of the author at the Jewish Hospital in Philadelphia, the Atlantic City Hospital and the Coatesville Hospital.

The accessories furnished with the unit are one 12 foot inductance cable applicator, two 7 by 9 electric field pads, one 3 by 7 electric field pad, one 4 by 13½ cuff and one 4 by 16 cuff.

The manufacturer submitted evidence substantiating the heating claims that are made for this unit.

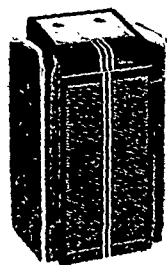


Fig. 1.—Burdick Triplex Unit.

Three vigorous adult male medical students ranging from 150 to 180 pounds were used for the experiments. Two trocars placed in hard rubber cannulas were inserted into the thigh and straight down into the depth of the muscular tissue until the instrument was at an approximate depth of 2 inches or until the femur was encountered. The second was introduced as nearly parallel to the skin as possible and subcutaneously at an approximate depth of one-eighth inch. The trocars were removed and the rubber cannulas left in situ. Temperature measurements were then taken by means of thermocouples of the hypodermic needle type and introduced through the cannulas. The constant junction was immersed in ice enclosed in a quart vacuum bottle. The electromotive force due to the difference in temperature of the junctions was read in millivolts from a Leeds-Northrup portable potentiometer. The thermocouples were calibrated in degrees Fahrenheit against a Bureau of Standards certified thermometer. Initial temperatures were taken and then each subject was submitted to a twenty minute application of maximum current intensity consistent with skin comfort. At the end of this period, temperatures were again recorded until the temperature began to drop. The highest temperature attained was recorded as final temperature, in each instance. Oral temperatures were also recorded.

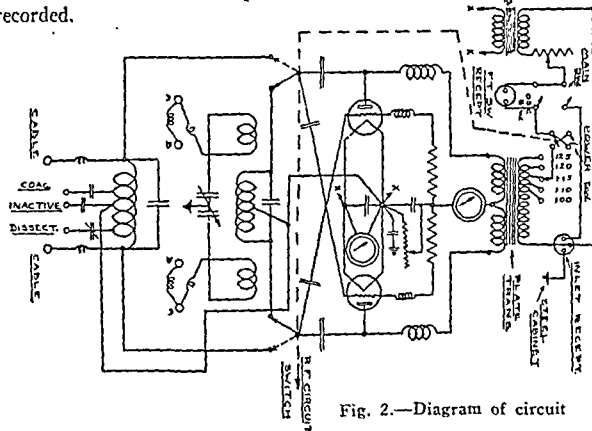


Fig. 2.—Diagram of circuit

The technic of application included: First, 15 meters. Double cuff technic. Two cuffs, 4 by 16 inches, were wrapped around the thigh equidistant from the cannula, approximately 9 to 11 inches center to center, and with three-eighths inch felt spacing.

Second, 25 meters. Coil technic. Four turns of the cable were wound around the thigh with six layers of bath towels for spacing, and each coil approximately 2 inches from its neighbor.

In the accompanying table, each reading is the average of six observations.

#### Results of Tests

Tech- nic	Wave- length	Quadriceps Muscle Deep Temperature		Subcutaneous Superficial Temp.		Oral Temperature	
		Initial	Final	Initial	Final	Initial	Final
Cuff ...	15	99.05	105.18	97.36	103.40	98.95	99.30
Coil ...	25	99.63	106.60	98.03	105.23	98.80	99.55

The temperature rise of the transformer, after the machine had been operated at full load for two hours, came within the limits of safety prescribed by the Council. The shipping weight of the apparatus is about 250 pounds. Burns may be produced,

but they may be avoided by ordinary precaution. Their likelihood to occur is much less than with conventional diathermy.

This machine was installed in a clinic acceptable to the Council and operated under actual clinical conditions. It was found to give satisfactory service. In view of the favorable report, based on the performance of this unit when cuff electrodes or coil technic were used, the Council on Physical Therapy voted to include the Burdick Triplex Unit, SWD-10, in its list of accepted devices.

## Council on Pharmacy and Chemistry

### NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

### DIPHTHERIA TOXOID, ALUM PRECIPITATED (REFINED) (See New and Nonofficial Remedies, 1936, p. 392).

Hixson Laboratories, Inc., Johnstown, Ohio.

*Diphtheria Toxoid, Alum Precipitated (Refined)*.—Prepared from diphtheria toxin having an L+ dose of 0.20 cc. or less and an M. L. D. value of 0.0025 cc. The toxin is treated with formaldehyde at a temperature of from 38 to 40 C. until its toxicity is so reduced that five human doses will cause no local or general symptoms of diphtheria poisoning when injected subcutaneously into guinea-pigs under observation for thirty days. The toxoid is precipitated with a solution of aluminum and potassium sulfate in such amount that the finished product shall not contain more than 20 mg. of alum per human dose. The supernatant solution is siphoned off and discarded. The precipitate is washed three times with sterile physiologic solution of sodium chloride and resuspended in sterile physiologic solution of sodium chloride so that the final volume is equal to that of the original toxoid. The finished product contains 1:10,000 merthiolate as a preservative. The immunizing value of the diphtheria toxoid-alum precipitated is determined according to the regulations of the National Institute of Health; namely, the human dose administered subcutaneously to at least four guinea-pigs weighing 500 Gm. produces at least two units of antitoxin per cubic centimeter of blood serum at the end of four weeks. Marketed in packages of one 1 cc. vial (one immunization), ten 1 cc. vials (ten immunizations) and one 10 cc. vial (ten immunizations).

### PHENOBARBITAL SODIUM-ABBOTT (See New and Nonofficial Remedies, 1936, p. 112).

The following dosage forms have been accepted:

*Ampoules Phenobarbital Sodium (Powder)-Abbott, 0.13 Gm. (2 grains). Tablets Phenobarbital Sodium-Abbott, 0.1 Gm. (1½ grains).*

### THROMBOPLASTIN LOCAL-SQUIBB (See New and Nonofficial Remedies, 1936, p. 220).

The following dosage form has been accepted:

*Thromboplastin Local-Squibb, Dental Package, six 4 cc. vials.*

### HALIBUT LIVER OIL (See New and Nonofficial Remedies, 1936, p. 459).

*McKesson's Halibut Liver Oil with Vitamin D Concentrate in Neutral Oil, Capsules, 3 minims.*—The content of each capsule is assayed to contain not less than 10,000 units (U. S. P.) of vitamin A and 945 units (U. S. P.) of vitamin D.

Manufactured by the International Vitamin Corporation, New York (McKesson & Robbins, Inc., Bridgeport, Conn., distributor). No U. S. patent.

### McKesson's Halibut Liver Oil Plain, 11 cc.—A brand of halibut liver oil-N. N. R.

Manufactured by the International Vitamin Corporation, New York (McKesson & Robbins, Inc., Bridgeport, Conn., distributor). No U. S. patent.

*McKesson's Halibut Liver Oil Plain, Capsules, 3 minims.*—The content of each capsule is assayed to contain not less than 10,000 units (U. S. P.) of vitamin A and not less than 170 units (U. S. P.) of vitamin D.

McKesson's halibut liver oil plain is prepared by extracting the oil of fresh halibut livers. The oil is refined and assayed to have not less than the potency of halibut liver oil-N. N. R.

### SCARLET FEVER STREPTOCOCCIC TOXIN, U. S. P. (See New and Nonofficial Remedies, 1936, p. 411).

Mulford Biological Laboratories, Sharp & Dohme, Philadelphia and Baltimore.

*Scarlet Fever Streptococcus Toxin for the Dick Test-Mulford*: Prepared by the method of Drs. Dick under U. S. Patent 1,547,369 (July 29, 1925; expires 1942) by license of the Scarlet Fever Committee Incorporated. Marketed in 1-cc. ampoules containing diluted toxin ready for immediate use sufficient for ten tests (in 0.1 cc. doses); also in packages of one 10-cc. ampule-vial containing diluted toxin ready for immediate use, sufficient for 100 tests.

# THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, DECEMBER 12, 1936

## MATERNAL TRANSFERENCE OF FLUORINE

During the past six years, fluorine has assumed considerable importance as a problem in public health. The most chemically active of the halogens, the toxic properties of this element and its soluble salts have long been appreciated. However, the recent attention given to fluorine has been elicited by the demonstration that mottling of the enamel of teeth is caused by extremely small concentrations of this substance in food and water. Instead of the normally smooth, translucent surface of the tooth, the affected structures appear dull, with chalky white areas which later frequently become stained in an unsightly manner. In severe cases, actual pitting may occur. The result in any case is permanent disfigurement, for new enamel ceases to form with the eruption of the tooth. In a recent review, Dean<sup>1</sup> has indicated the wide distribution of endemic fluorosis in this country. The continued use of drinking water containing as little as one part per million of fluorine will produce mild dental changes in a small proportion of children; with six parts per million, the incidence of moderate mottling is usually 100 per cent. As fluorine exerts its deleterious effect only during the period of development of the tooth, damage can be prevented by changing the source of drinking water, a device that has proved of practical benefit, or by suitable dilution of contaminated water with other water not containing fluorine.

Although wide investigative effort has been devoted to the etiology of mottled enamel, little attention has heretofore been given to pathways of entrance of fluorine into the organism other than through the drinking water and food. That fluorine can pass the placenta and gain entrance to the fetus is shown by a recent study of Murray.<sup>2</sup> One group of pregnant female albino rats was given an adequate ration and another group received the same diet plus 0.05 per cent of sodium fluoride. Within twenty-four hours after birth

the litters were killed and ashed and the fluorine in the ash determined. Roughly five times the fluorine content of the control animals was found in those the mothers of which consumed the fluoride-containing food. The actual difference represents an amount which from other studies would seem to be harmful to the organism. In a further experiment the relative influence of contact with fluorine during gestation and the consumption of milk from mothers ingesting fluoride was determined by analyzing the bones of the young at 21 days of age. The results show that the young absorb fluorine when it is administered to the mothers both before the birth and after the birth of the litters. There is not only placental transmission of fluorine but also excretion through the milk.

Heretofore attention has been given largely to the fluorine content of drinking water consumed during the first eight years of life, the period of development of the permanent teeth. The foregoing discussion indicates that mottling of the temporary teeth may result from antepartum maternal fluorosis and that, in regions of endemic fluorosis, milk may contain biologically effective amounts of this element. The fact that, in certain parts of the world, dental fluorosis is prevalent in cattle and sheep and that fluoride is present in certain samples of rock phosphate which may be used as fertilizer for farm and garden crops indicates the many directions in which one may be exposed to fluorine even in regions where it does not occur naturally.

## BLOOD CHOLESTEROL AND ATHEROSCLEROSIS

The feeding of cholesterol to rabbits has been repeatedly shown to produce an experimental atherosclerosis characterized by the deposition of lipids in both the intima and the media of the aorta and less frequently perhaps of other blood vessels.<sup>1</sup> The exact nature of the changes involved in the production of the lesions, however, is not clearly understood. It was once thought that the vascular changes were primarily dependent on the development of a hypercholesterolemia.<sup>2</sup> If for unknown reasons the lipid content of the blood remained normal, cholesterol was not deposited in the walls of the vessels. Subsequent studies have indicated, however, that other factors are undoubtedly involved. In a recent investigation,<sup>3</sup> for example, the feeding of cholesterol to rabbits for as long as thirty-one days in amounts sufficient to cause a hypercholesterolemia failed to produce atherosclerosis. Nor did treatment with substances injurious to the vascular system, as the intravenous injection of streptococcus toxin, peptone or uric acid, the feeding of ammonium chloride, the production

1. Duff, G. L.: The Nature of Experimental Cholesterol Arteriosclerosis in the Rabbit, *Arch. Path.* 22: 161 (Aug.) 1936.

2. Versé, M.: Ueber die experimentelle Lipo-cholesterinämie, *Beitr. z. path. Anat. u. z. allg. Path.* 63: 789, 1916.

3. Jobling, J. W., and Meeker, D. R.: Further Investigations on Experimental Atherosclerosis, *Arch. Path.* 22: 293 (Sept.) 1936.

1. Dean, H. T.: Chronic Endemic Dental Fluorosis, *J. A. M. A.* 107: 1269 (Oct. 17) 1936.

2. Murray, M. M.: *J. Physiol.* 87: 388 (Sept.) 1936.

of artificial fever or the induction of anaphylactic shock, increase the incidence of cholesterol lesions in the aorta. Evidently, the mechanism involved in the production of atherosclerosis in the rabbit by cholesterol feeding is not a simple one.

As a result of the earlier work on experimental atherosclerosis in this species, some investigators have placed emphasis on the importance of cholesterol as an etiologic factor in human atherosclerosis. Indeed, some believe that hypercholesterolemia is a primary etiologic factor in spontaneous atherosclerosis of man. However, a number of attempts to demonstrate such a relationship in patients have not yielded conclusive results, partly because of the extremely wide variation in serum cholesterol found in normal persons and partly because of the fact that during life the disease is recognized only after the process has advanced so far that secondary functional disturbances, which themselves alter the serum cholesterol level, vitiate the results. Obviously, it is necessary to make the comparison during the early stages of the disease when the deposits are in process of formation. However, this approach to the question is complicated by the fact that patients in the early stage of atherosclerosis are rarely seen, since symptoms which would cause them to consult a physician usually do not develop then. Also the diagnosis of the disease at that stage is exceedingly difficult. In fact, the degree of atherosclerosis can be established with certainty only by a direct examination of the vessels, a procedure necessarily limited to necropsy material.

Recently<sup>4</sup> this problem has been approached in a way that appears to be free from the objections cited. A comparison of the concentration of cholesterol in the blood serum with the lipid content of the intima of the aorta was made on necropsy material taken from persons who had died suddenly, in most instances as a result of automobile accidents. A total of 123 cases, some with varying degrees of atherosclerosis, were selected for study; no material was taken from subjects in whom pathologic processes other than atherosclerosis were found. The values obtained gave no indication whatever of a correlation between the concentration of cholesterol in the serum and the lipid content of the aorta, even in subjects with a marked degree of atherosclerosis. Indeed, the average and the variations in the amounts of cholesterol in the serum were practically identical with those usually found in normal healthy subjects. The foregoing results, both in rabbits with experimental atherosclerosis and in man with varying degrees of spontaneous atherosclerosis, clearly indicate that factors other than the concentration of cholesterol in the blood must be involved as etiologic agents in the production of the lesions characteristic of this disease.

## EXPERIMENTAL EPIDEMIOLOGY

The study of experimental epidemics recently reported by Greenwood, Hill, Topley and Wilson<sup>1</sup> involves observations extending over some fifteen years and the use of between 100,000 and 200,000 mice. Their methods were adequately controlled and ably presented. In fact, so carefully was their technic developed that it usually proved possible to maintain herds of mice for months or years without the accidental introduction of any extraneous infection.

In one series of observations, six different epidemics of pasteurellosis were under simultaneous observation. In the long continued epidemics under these experimental conditions, no tendency for periods of high or low mortality to recur at definite seasons of the year was noted. Uncontaminated animals were introduced to many of their herds of infected mice at stated intervals. The great majority of such mice were infected shortly after entrance, so that the reacting system at any moment contained a relatively small proportion of animals presenting a virgin soil. After the first wave of disease and death that always follows the aggregation of an infected herd, the epidemics settled into a state of unstable equilibrium. With a small number of daily uninfected immigrants, the mortality curves tended to show relatively wide and relatively regular fluctuations.

The observations on ectromelia—a virus disease of mice—gave encouraging results, which accorded with the general experience that antiviral immunity is as a rule more effective than antibacterial immunity. In this disease, even under the severest conditions of prolonged exposure, a relatively high degree of protection could be attained.

The general conclusions resulting from this important study are carefully restricted to mice. The authors were careful to maintain a cautious attitude toward any interpretation applied to problems of human epidemiology. The general character of the epidemic process, as revealed in herds of mice living in close and continuous contact and subject to the continuous or intermittent migration of susceptibles, reveals that the disease, under these circumstances, will never normally die out. The form of the mortality curve depends, in the main, on the rate of immigration. The average death rate over any long period is probably not highly correlated with the immigration rate. The condition of equilibrium, though it may be continued for long periods, is fundamentally unstable and may be seriously disturbed by some extrinsic or intrinsic factor. In epidemics initiated by virulent and infective strains of *Bacterium aertrycke*, *Pasteurella muriseptica* or the virus of ectromelia, the rate of mortality during the early days of herd life is high. At later cage ages the level of mortality decreases. The expectation of

4. Landé, K. E., and Sperry, W. M.: Human Atherosclerosis in Relation to the Cholesterol Content of the Blood Serum, *Arch. Path.* 22: 301 (Sept.) 1936.

1. Greenwood, Major; Hill, A. B.; Topley, W. W. C., and Wilson, J.: *Experimental Epidemiology*: Medical Research Council Special Report Series, No. 209, London, His Majesty's Stationery Office, 1936.

life of the surviving mice rises continuously after the twentieth to thirtieth day of cage life, which, while greatly in excess of that of new entrants, never reaches the limited expectation of life of normal mice living in the same environment but not exposed to contact with an infective disease. It seems certain that selection, both by death of the more susceptible and by natural immunization, plays a part in the increased resistance of surviving mice. No evidence is obtainable that any change in the standard diet exerts a favorable influence on the course of mortality, although a known effect of A avitaminosis in lowering the resistance of animals cannot be denied. The experiments concerning the influence of bacteriophage on mouse typhoid yielded entirely negative results.

The carefully developed technic, the close control and the conservatism in interpreting their results in the light of human epidemics are especially commendable in this important contribution. It is a well balanced, stimulating study.

### Current Comment

#### "HEALTH ADVICE SHOULD BE AS FREE AS AIR AND WATER"

The title here quoted appears as that of an editorial by Bernarr Macfadden in his magazine called *Liberty*. Our old friend who used to exalt muscles is now worried because people let money creep into their affairs. He says "we have allowed business to creep into everything." He worries because there is business in religion and even romance is often commercialized. "There are women," he says, "who go into court and sue for breach of promise." He even mentions the fact that if a woman loses her husband as a result of romantic attraction from some other source there is often a suit for money damages! Now those familiar with newspaper records of old "bodylove" Macfadden's career in the courts devoted to marital upsets will realize that thus far he has been talking right out of his own experience. But he turns his attention next to the matter of health and disease and he insists that "the healers, whether osteopaths, chiropractors, or whatever they be—should be paid by the government." He doesn't like competition between various systems of doctoring. He thinks that with competition removed "all would work together for the purpose of making the patient healthy and strong." He says that "for more than fifty years" he has "been teaching health building and many of the simple procedures that have proved invaluable are not recognized by the public. People everywhere should have the advantage of these invaluable truths." O. K., Mr. Bernarr Macfadden! Why not use part of the magnificent Macfadden fortune, erected by the sale of physical culture hokum to the suckers who purchased the Macfadden courses, and the "dumbbells" who purchased the dumb-bells and the nature cure addicts who purchased the nostrums—why not use that now to give away these marvelous truths and procedures to all the people? If health advice—

even the kind of bad advice you have been selling—should be as free as air and water, why don't you give them yours instead of selling it? Maybe, after all, Mr. Macfadden, muscle and not mind or morals is your special field!

#### PARALYTIC AND PREPARALYTIC POLIOMYELITIS

According to a note in *Public Health Reports*,<sup>1</sup> two states have already instituted a classification for reporting cases of poliomyelitis into paralytic and preparalytic or nonparalytic types. The Department of Public Health of Massachusetts placed this classification in effect at the beginning of the present year. Effective October 20, a similar division was to be reported in the state of Tennessee. The number of cases of preparalytic poliomyelitis which are included in the total reported for that disease will be stated in each weekly report. These are nonfatal cases of poliomyelitis that have not shown definite muscular weakness. Because of the variability and uncertainty in recognition of nonparalytic poliomyelitis, it is believed that for recording and comparing intensity of spread of poliomyelitis only the paralytic cases should be counted when such distinction is possible. Any notable number of nonparalytic cases will be reported separately. There is no intention in this procedure to minimize the importance of the preparalytic or nonparalytic cases from the point of view of the spread of the disease or the necessity for medical care.

#### POLYAVITAMINOSIS AND ASULFUROSIS

The synergistic action of vitamins A and B has been recognized for a considerable period. A disease has been described which is distinct from pellagra and beriberi, is due to A and B avitaminosis and is characterized by lesions of the mucous membranes and skin, associated with or followed by disorders of the nervous system. Wright,<sup>1</sup> who has recently discussed the clinical and pathogenic aspects of this disorder, points out that the distribution of the epithelial lesions, which are the earliest evidence of the disease, is important. The tongue, lips, angles of the mouth, scrotum or vulva, and conjunctiva are the sites of earliest predilection. The reason for this localization, he believes, is that these are the areas richest in certain special cutaneous sense organs called end-bulbs, which are also found in the sheaths of nerve trunks, synovial membranes and intestinal mucosa. These end-bulbs are sense organs, composed of modified epithelial cells, in which the delicate terminations of the nerve filaments end. Observations on prisoners in the Freetown Gaol in Sierra Leone indicate that a diet containing an excess of starches tends to produce evidence of this clinical syndrome. Furthermore, prompt cure could be obtained by increasing either of the vitamins or the two together. Because of the evidence that lack of sulfur also plays a part in the deficiency, it was decided to use organic sulfur as a therapeutic agent in the treatment of "A and B avitaminosis disease" in Sierra Leone. Response of some of the patients to sulfur therapy was prompt

1. Paralytic and Nonparalytic (Preparalytic) Poliomyelitis, *Pub. Health Rep.* 51: 1556 (Nov. 6) 1936.

1. Wright, E. J.: Polyavitaminosis and Asulphurosis, *Brit. M. J.* 2: 707 (Oct. 10) 1936.

and significant. In fact, some relapsed patients showed a cure with sulfur even while continuing on the diet and under the same conditions in which the relapse occurred. The author concluded that vitamins A and B are interdependent for their efficient functioning; an excess of a cereal, not containing a cyanogen group, added to a balanced diet can precipitate avitaminosis; vitamins A and B can remain inactive in the organism if its sulfur content falls below a certain level; and, finally, great benefit to the patients and economy in treatment result from judicious sulfur therapy.

## Association News

### ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE

The Annual Congress of the Council on Medical Education and Hospitals of the American Medical Association will be held at the Palmer House, Chicago, Feb. 15 and 16, 1937. The Federation of State Medical Boards of the United States will participate in the congress. The program follows:

#### MONDAY MORNING, FEBRUARY 15

- Report of the Council on Medical Education and Hospitals*  
Ray Lyman Wilbur, M.D., LL.D., Chairman, Stanford University, Calif.
- The Regulation of the Professions in the Public Interest*  
William E. Wickenden, B.S., President, Case School of Applied Science, Cleveland.
- What is a Profession?*  
Guy Stanton Ford, Ph.D., Dean, University of Minnesota Graduate School, Minneapolis.
- The Medical School Survey*  
Herman G. Weiskotten, M.D., Dean, Syracuse University College of Medicine, Syracuse, N. Y.

#### MONDAY AFTERNOON, FEBRUARY 15

- Report of the Survey to Individual Schools*  
William D. Cutter, M.D., Secretary, Council on Medical Education and Hospitals of the American Medical Association, Chicago.

#### SYMPOSIUM ON CANCER

- Biology of Cancer*  
C. C. Little, Sc.D., Director, Roscoe B. Jackson Memorial Laboratory, Bar Harbor, Maine.
- Pathology of Cancer*  
Francis Carter Wood, M.D., Director, Institute of Cancer Research, Columbia University College of Physicians and Surgeons, New York.
- The Teaching of Cancer*  
Frank E. Adair, M.D., Secretary, American Society for the Control of Cancer, New York.

#### TUESDAY MORNING, FEBRUARY 16

JOINT SESSION WITH THE FEDERATION OF STATE MEDICAL BOARDS OF THE UNITED STATES

#### SYMPOSIUM ON THE SELECTION OF STUDENTS

- Measurement of Personality*  
L. L. Thurstone, Ph.D., Professor of Psychology, University of Chicago.
- E. K. Strong Jr., Ph.D., Professor of Psychology and of Applied Psychology, Stanford University Graduate School of Business, Stanford University, Calif.
- Attitude Test*  
Torald Sollmann, M.D., Dean, Western Reserve University School of Medicine, Cleveland.
- SYMPOSIUM ON TECHNIC OF EXAMINATIONS*  
*Philosophical Comments on Examinations*  
Howard T. Karsner, M.D., Director, Institute of Pathology, Western Reserve University, Cleveland.
- Fundamental Purposes, Methodology and Technics of Examining in Relation to Medical Education and Licensure*  
Ben D. Wood, Ph.D., Associate Professor of Collegiate Educational Research, Teachers College, Columbia University, New York.
- A Better Type of Examination*  
Robert P. Dobbie, M.D., Assistant Professor of Surgery, University of Buffalo School of Medicine, Buffalo, N. Y.

#### TUESDAY AFTERNOON, FEBRUARY 16

- [Subject to be announced]  
Max Mason, Ph.D., California Institute of Technology, Pasadena, Calif.
- Relation of the American Medical Association to the Certification of Specialists*  
Charles Gordon Heyd, M.D., President, American Medical Association, New York.

*Increase in the Number of Practitioners in the Country*  
Harold Rypins, M.D., Secretary, New York Board of Medical Examiners, Albany.

*Graduate Instruction in Idaho*  
Charles R. Scott, M.D., Twin Falls, Idaho.

#### THE FEDERATION OF STATE MEDICAL BOARDS OF THE UNITED STATES

#### MONDAY AFTERNOON, FEBRUARY 15

- Medical Licensure as Related to the Practice of Medicine*  
Edward H. Cary, M.D., Chairman, Committee on Legislative Activities of the American Medical Association, Dallas, Texas.
- The Doctor and the Narcotic Violator*  
R. L. Sensenich, M.D., President, Indiana State Medical Association, South Bend.
- A Lawyer's Point of View on the Narcotic Problem*  
Herman B. Carlson, Attorney, Iowa Board of Medical Examiners, Des Moines.
- Medical Licensure Problems in New England*  
Edward A. Knowlton, M.D., Member, Massachusetts Board of Registration in Medicine, Holyoke.

#### MONDAY EVENING, FEBRUARY 15

#### FEDERATION DINNER

- Address of the President*  
J. N. Baker, M.D., Secretary, Alabama Board of Medical Examiners, Montgomery.
- Address: Licensure and the Organized Profession*  
Charles Gordon Heyd, M.D., President, American Medical Association, New York.
- Address: "Trail of the Adjuster"*  
Thomas J. Crowe, M.D., Secretary, Texas Board of Medical Examiners, Dallas.

#### Round Table Discussion

#### TUESDAY MORNING, FEBRUARY 16

JOINT SESSION WITH THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS OF THE AMERICAN MEDICAL ASSOCIATION

SYMPOSIUMS ON THE SELECTION OF STUDENTS AND THE TECHNIC OF EXAMINATIONS

#### TUESDAY NOON, FEBRUARY 16

- Federation Luncheon*
- Executive Session*

### THE ATLANTIC CITY SESSION

#### Appointment of Section Representatives to Scientific Exhibit

The following representatives from the various sections of the Scientific Assembly have been appointed to the Scientific Exhibit for the Atlantic City session:

- PRACTICE OF MEDICINE:**  
Fred M. Smith, Iowa City.
- SURGERY, GENERAL AND ABDOMINAL:**  
Lester R. Whitaker, Boston.
- OBSTETRICS, GYNECOLOGY AND ABDOMINAL SURGERY:**  
H. Close Hesseltine, Chicago.
- OPHTHALMOLOGY:**  
Georgianna Dvorak-Theobald, Oak Park, Ill.
- LARYNGOLOGY, OTOTOLOGY AND RHINOLOGY:**  
Louis J. I. Burns, Philadelphia.
- PEDIATRICS:**  
F. Thomas Mitchell, Memphis, Tenn.
- PHARMACOLOGY AND THERAPEUTICS:**  
Wallace M. Yater, Washington, D. C.
- PATHOLOGY AND PHYSIOLOGY:**  
F. W. Konzelmann, Philadelphia.
- NERVOUS AND MENTAL DISEASES:**  
Peter Bassoe, Chicago.
- DERMATOLOGY AND SYPHILOLOGY:**  
Clark W. Finnerud, Chicago.
- PREVENTIVE AND INDUSTRIAL MEDICINE AND PUBLIC HEALTH:**  
Paul A. Davis, Akron, Ohio.
- UROLOGY:**  
R. S. Ferguson, New York.
- ORTHOPEDIC SURGERY:**  
Jesse T. Nicholson, Philadelphia.
- GASTRO-ENTEROLOGY AND PROCTOLOGY:**  
J. A. Bargaen, Rochester, Minn.
- RADIOLOGY:**  
E. E. Downs, Woodbury, N. J.

Application blanks for space in the Scientific Exhibit may be obtained from any of these representatives or from the Director, Scientific Exhibit, 535 North Dearborn Street, Chicago.

## RADIO BROADCASTS

The American Medical Association and the National Broadcasting Company are presenting the second series of dramatized health broadcasts under the title *Your Health*. The first broadcast in the new series, the thirty-second dramatized cooperative broadcast under the title *Your Health*, was given October 13. The theme for 1936-1937 differs slightly from the topic in the first series, which was "medical emergencies and how they are met." The new series is built around the central idea that "100,000 American physicians in great cities and tiny villages, who are members of the American Medical Association and of county and state medical societies, stand ready, day and night, to serve American people in sickness and in health."

The program will go out on the Blue network instead of on the Red network, as originally announced.

The topics are announced monthly in advance in *Hygeia*, the Health Magazine, and three weeks in advance in each issue of *THE JOURNAL*. The topics and speakers for the next three programs are:

- December 15. Milk. W. W. Bauer, M.D.
- December 22. The Gift of Health. Morris Fishbein, M.D.
- December 29. Health Assets and Liabilities. W. W. Bauer, M.D.

The time of the broadcast is Tuesday afternoon at 4 o'clock central standard time (5 o'clock eastern time, 3 o'clock mountain time, 2 o'clock Pacific time).

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

## ARKANSAS

**Lectures on Obstetrics.**—A postgraduate course in obstetrics will be conducted in Arkansas, under the auspices of the U. S. Children's Bureau, the state medical society and the state board of health. Dr. M. Edward Davis, associate professor of obstetrics and gynecology of the Division of Biological Sciences, University of Chicago, will be the lecturer. His schedule is as follows:

- Jonesboro, January 4-8.
- Harrison, January 11-15.
- Fort Smith, January 18-22.
- Hope, February 8-12.
- Monticello, February 15-19.
- Conway, February 22-26.

The subjects will include the treatment of hemorrhage in pregnancy; antepartum care and the toxemias of pregnancy; puerperal infection, its prophylaxis and treatment; management of breech presentation and management of labor in the contracted pelvis, and forceps delivery.

## DELAWARE

**Health at Wilmington.**—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of 37 million indicate that the highest mortality rate (20.6) for the week ended November 28 appeared for Wilmington and that the rate for the group of cities as a whole was 11.5. The mortality rate for Wilmington for the corresponding period last year was 8.3 and for the group of cities, 11.1. The annual rate for eighty-six cities for the forty-eight weeks of 1936 was 12, as against a rate of 11.3 for the corresponding period of the previous year. Caution should be used in the interpretation of these weekly figures, as they fluctuate widely, and the death rate may tend to be increased in cities that are hospital centers or that have a large population of Negroes.

## ILLINOIS

**Society News.**—The second annual meeting of the members of the American College of Physicians of the state of Illinois, outside of Chicago, was recently addressed in Peoria by Drs. Allen K. Krause, Baltimore, on "Future Possibilities of the Diagnosis of Tuberculosis"; Horace W. Soper, St. Louis, "Clinical Significance of Milk and Cholesterol in the Dietary of Man," and Frank Smithies, Chicago, "Certain Ulcerative Lesions of the Bowel, Their Recognition and Management."—At a meeting of the Adams County Medical Society in Quincy, November 9, Dr. Carl F. Vohs, St. Louis, discussed

"Medical Security for the People by the Profession," and Mr. Ray F. McCarthy, St. Louis, "Interpreting Medical Leadership by the Profession."

## Chicago

**Meetings of Branch Societies.**—Dr. Howard K. Gray, Rochester, Minn., discussed "Surgery of Peptic Ulcer and Its Complications" before the Evanston Branch of the Chicago Medical Society, December 3, and Dr. Arthur R. Colwell, Evanston, Ill., "The Use of Protamine Insulin in the Treatment of Diabetes."—At a meeting of the North Side Branch, December 3, Dr. James B. Herrick read a paper entitled "Dr. Charles T. Parkes as I Knew Him," and Dr. Austin A. Hayden, "Biography of Charles T. Parkes." Drs. Frederick W. Madison and Theodore L. Squier, Milwaukee, discussed "The Role of Sensitivity to Drugs in the Production of Agranulocytosis."—Dr. Julius H. Hess addressed the Englewood Branch on "Clinical Procedures in Pediatric Practice," December 1.—At a meeting of the North Shore Branch, December 1, the speakers included Drs. Herbert A. Sacks on "Crisis in Addison's Disease Simulating Coronary Thrombosis" and Robert W. Keeton, "Problems in Malnutrition."

**State Commanders' Meeting.**—State commanders from ten Central Western states organized in the Women's Field Army of the American Society for the Control of Cancer met at the Chicago Woman's Club, November 30, to discuss plans for "enlistment week," March 21-27. "Early cancer is curable; fight it with knowledge" is the slogan of the field army, which seeks to enroll members for an enlistment fee of \$1. The money will be used to defray the expenses of disseminating information about cancer. It is hoped that this educational campaign will bring early cases to competent physicians for treatment. Speakers at the meeting included Mrs. Grace Morrison Poole, national adviser of the army; Dr. James P. Simonds, professor of pathology, Northwestern University School of Medicine, and Dr. Frank L. Rector, Evanston, field representative of the American Society for the Control of Cancer. Commanders were present from Colorado, Indiana, Kansas, Kentucky, Illinois, Michigan, Minnesota, Nebraska, Wisconsin and South Dakota.

## INDIANA

**First Medicolegal Conference.**—Scientific methods of criminal investigation and the coordination of medical and legal efforts in criminal and civil procedure were considered at Indiana's first medicolegal conference, December 4, at the Indiana University Medical Center, Indianapolis. The conference was sponsored by the medical school, the state police department, the university's institute of criminal law and criminology and the Indiana Committee, a group of citizens interested in law enforcement and improvement of criminal law administration. Laboratory work of the university's departments of toxicology, biochemistry, pathology and psychiatry and that of the state police laboratory was demonstrated, and the question of employment of medical examiners selected on the basis of their special qualifications for criminal investigative work was discussed. Chemical tests for intoxication with special regard to automobile and industrial accidents were discussed by Rolla N. Harger, Ph.D., professor of biochemistry and toxicology, Indiana University School of Medicine; Clarence W. Muehlberger, Ph.D., Chicago, coroner's toxicologist of Cook County; Kenneth H. Kohlstaedt, assistant superintendent of the Indianapolis City Hospital; Dr. Ethelbert R. Wilson, coroner-elect of Indianapolis, and Lieut. Don L. Kookon of the state police. Another session was devoted to a consideration of "The Expert Medical Witness, with Special Regard to Questions of Insanity, Psychiatric Assistance and Reliability of Testimony." Other speakers on the program included E. P. Coffey, chief of the federal crime detection laboratory, Washington, D. C.; Hugh McK. Landon, president of the Indiana Committee; Dr. Willis D. Gatch, dean of the medical school; Dr. Frank Forry, head of the department of pathology; Dr. Clyde Gray Culbertson, head of the central laboratory at the medical center; Prof. James J. Robinson, director of the institute of criminal law and criminology; Albert L. Rabb, member of the state police board; Joseph J. Daniels of the Indianapolis Bar Association, and James A. Collins, former judge of the Marion County Criminal Court.

## KANSAS

**Venereal Disease Committee.**—Dr. Arthur D. Gray, Topeka, has been appointed chairman of a committee on venereal disease recently created by the Kansas Medical Society. Other members include Drs. Robert M. Brian and Glen E. Kassebaum, El Dorado; Oscar W. Davidson, Kansas City; Henry Haerle, Marysville; James E. Henshall, Osborne; Oliver

W. Miner, Garden City; Harold F. O'Donnell, Wichita; Chester O. Shepard, Independence; Walter J. Singleton, LaCrosse, and Leslie C. Tilden, Oberlin. The establishment of the committee followed a conference between representatives of the state medical society and the state board of health. The committee will act in an advisory capacity to the state board of health in the development of programs throughout Kansas.

### MAINE

**Society News.**—At a meeting of the Hancock County Medical Society in Ellsworth, October 21, Drs. Frederick T. Hill, Waterville, president of the Maine Medical Association, discussed acute conditions of the throat; Philip L. Gray, South Brooksville, "Uses of Barbitol and Its Derivatives in General Medicine."—Dr. Laforest J. Wright, Bangor, read a paper before the Oxford County Medical Association in Bethel, October 13, entitled "The Foot and the Shoe."—The Penobscot County Medical Society was addressed, October 27, by Dr. William B. Castle, Boston, on "Rational Treatment of Anemias."—At a meeting of the Somerset County Medical Society in Bingham, October 22, Dr. Charles Ayers, Worcester, Mass., discussed "Lumbosacral Diseases and Sciatica."

### MASSACHUSETTS

**Lessons in Parliamentary Law.**—The Wachusett Medical Improvement Society announces a course of four lessons in parliamentary law for physicians at the Holden District Hospital by Charles W. Proctor, Esq. The first lecture was given November 25 on "Parliamentary Conduct of Members at Meetings."

**Williams Memorial Lecture.**—The Henry Willard Williams Memorial Lecture will be delivered at the Boston City Hospital, December 16, by Dr. Allen Greenwood, professor of ophthalmology, emeritus, Tufts College Medical School, on "History of Ophthalmology in New England." Dr. Benjamin Sachs, professor of ophthalmology at Tufts, will preside.

### MICHIGAN

**Personal.**—David Judson Lingle, Ph.D., associate emeritus professor of physiology, University of Chicago, died in Rapid City, November 20, aged 73. Dr. Lingle until his retirement in 1925 had been a member of the university faculty for thirty-three years and was known for his research on the heart and the circulatory system.—Dr. John McLean, Hartford, observed his ninety-seventh birthday November 14.—Dr. Thomas E. Camper, Camden, N. J., has been appointed health officer of Iron County.

**Forum on Medical Economics.**—The relation of social security to the practice of medicine was the theme of a panel discussion in Detroit, December 9, under the auspices of the medical economics committee of the Wayne County Medical Society and the Michigan State Medical Society. Speakers included:

William Haber, professor of economics, University of Michigan, Ann Arbor, and state relief administrator.

Robert W. Kelso, director, Institute of Public and Social Administration, University of Michigan, Ann Arbor.

Rev. Frederic Siedenberg, S.J., executive dean, University of Detroit, and president of state conference of social workers.

S. S. Skelton, director of welfare for Oakland County.

Dr. Frederick A. Baker, Pontiac, member of the Council of the Michigan State Medical Society.

Dr. Stanley W. Insley, Detroit, member, relief study commission.

Dr. Henry A. Luce, Detroit, member, House of Delegates, American Medical Association.

Dr. J. Milton Robb, Detroit, past president, state medical society.

### MINNESOTA

**Illegal Practitioner Ordered Out of State.**—Henry Jeffrey, Armstrong, pleaded guilty to two complaints charging him with practicing healing without a basic science certificate, November 24, before Judge L. H. Morse of the municipal court at Mankato. Jeffrey was fined \$100 on the first complaint; he paid the fine, and the jail sentence of ninety days received on the second complaint was suspended. Jeffrey represented himself as "Dr." Jeffrey. In September he treated a Mankato woman, suffering with tuberculosis, for asthma, and prescribed several kinds of roots and herbs. At the time of his arrest, the back of his automobile was filled with boxes and packages of roots and herbs, pill and salve boxes and empty bottles, with duplicate sheets containing directions for the various preparations; his customary charge was \$15 at the time of his first call and \$10 a month thereafter. He was told to stay out of Minnesota for one year.

### MISSISSIPPI

**Society News.**—Dr. Henry King Wade, Hot Springs National Park, Ark., addressed the Delta Medical Society in Belzoni, October 14, on "Gonorrheal Epididymitis and Its Treatment," among others.—The Issaquena-Sharkey-Warren Counties Medical Society was addressed, December 8, at Vicksburg, among others, by Drs. Waltman Walters, Rochester, Minn., on "Surgical Lesions of the Biliary Tract with Special Reference to Recent Studies in Obstructive Jaundice," and James M. Mason, Birmingham, Ala., "Diverticulitis of the Ileum."

### NEW YORK

**Tests of Dust Control Apparatus.**—The state department of labor recently set up a field laboratory at a granite quarry at Letchworth Village, Rockland County, to test several types of dust control equipment which will be made available for commercial use in compliance with antisliposis legislation adopted last year. The Rockland County granite is said to have a high silica content which will afford an effective test for the equipment. Dr. John J. Lloyd, Rochester, was recently named a member of the special board authorized in the new law to act as consultants on dust diseases for the state department of labor. Drs. Edgar Mayer and James Burns Amerson Jr., New York, are the other consultants.

### New York City

**Third Harvey Lecture.**—The third Harvey Society Lecture of the year will be given by Dr. Stephen W. Ranson, professor of neurology and director of the institute of neurology, Northwestern University Medical School, Chicago, at the New York Academy of Medicine, December 17, on "Some Functions of the Hypothalamus."

**Personal.**—Dr. Thomas M. Rivers of the Rockefeller Institute for Medical Research received the honorary degree of doctor of science at the centennial convocation of Emory University, Atlanta, December 12.—A gold medal was recently presented to Dr. Joseph Tenopir, chairman of the medical board of the Caledonian Hospital, Brooklyn, in appreciation of his services to the hospital. He has been associated with the hospital since 1917 and chairman of the medical board for six years.—Dr. Robert Gutierrez addressed the French Urological Congress during its annual congress in Paris, October 5-10, on "The Role of Anomalies of the Kidney and Ureter in the Causation of Surgical Conditions."—Dr. Ephym E. Syrkin has been appointed executive director of the Beth Moses Hospital, Brooklyn, to succeed Dr. Milton L. Dryfus, who retired November 1.

**Society News.**—Dr. Charles Gordon Heyd, President of the American Medical Association, addressed the Medical Society of the County of Queens, November 24, on "Organized Medicine—A Service to the Community." The society met jointly with the dental profession of Queens County, November 30, with the following speakers: Dr. William J. Hoffman, "The Relationship of Dentistry to Intra-Oral Cancer"; Louis I. Abelson, D.D.S., "Medicodental Cooperation in Everyday Practice as Related to Office Practice"; Dr. Arthur J. Horton, Halli, N. Y., "Focal Infection and Its Relation to Systemic Diseases," and Dr. Morris I. Schamberg, "Medicodental Cooperation in Everyday Practice as Related to Hospital Practice."—Dr. Henry C. Eichacker addressed the Queensboro Surgical Society, November 16, on "Fibromyomas Complicating Pregnancy."—Drs. Irving H. Pardee and Ira I. Kaplan addressed the New York Endocrinological Society, November 25, on "A New Pituitary-Parathyroid Syndrome" and "Radiation Therapy in Endocrine Disorders" respectively.—Drs. Guilford S. Dudley and Laurence Miscall addressed the New York Surgical Society, November 25, on "Inflammatory Tumors of the Gastro-Intestinal Tract."—A symposium on the child and the adolescent was presented at the meeting of the International Spanish-Speaking Association of Physicians, Dentists and Pharmacists, November 27, by Drs. George W. Crile, Cleveland; Edward L. Bauer, Philadelphia; Guillermo Brinck, University of Santiago, Chile; Henry Keller, Richard L. Frank and Charles G. Kerley.

### NORTH CAROLINA

**Society News.**—Dr. Cecil C. Swann, Asheville, addressed the Buncombe County Medical Society, Asheville, October 19, on "Allergy in Relation to Otolaryngology."—The Seventh District Medical Society held a meeting at Gastonia, October 29, with Dr. Louis Hamman, Baltimore, as guest clinician. Among other speakers were Drs. William C. Bostic Jr., Forest City, on "The Poisonous Spiders"; Thomas C. Bost, Charlotte,

"Lowering the Mortality in Intestinal Obstruction," and S. E. Moser, D.D.S., Gastonia, "Diagnosis and Treatment of Vincent's Infection."

## OHIO

**Personal.**—Dr. and Mrs. Charles R. Ziegler, Carrollton, celebrated the sixtieth anniversary of their marriage November 9. Dr. Ziegler was graduated from Jefferson Medical College, Philadelphia, in 1874, and has practiced in Carrollton since 1885.—Dr. Richard S. Austin has been appointed to the Cincinnati Board of Health to succeed the late Dr. William B. Wherry.

**Physicians Honored for Long Service.**—Four physicians were guests of honor at a luncheon meeting of the Highland County Medical Society in Hillsboro, November 11, in recognition of their long records of medical practice: Drs. Robert J. Jones and John A. Mercer, Greenfield, John C. Larkin, Hillsboro, and Thomas W. Roberds, Belfast. All have practiced for more than forty years. Dr. John D. McBride, Hillsboro, presided and the speakers were Drs. Edwin M. Huston, Dayton, president of the Ohio State Medical Association; John A. Caldwell, Robert Carothers and Parke G. Smith, all of Cincinnati.

## OKLAHOMA

**Society News.**—Drs. Victor K. Allen, Tulsa, and Horace Reed, Oklahoma City, addressed the Kay County Medical Society, Ponca City, October 15, on "Hemorrhoids and Their Treatment" and "Anesthesia and Abdominal Surgery from the Surgeon's Viewpoint" respectively.—Drs. William L. Bonham and Minard F. Jacobs, Oklahoma City, addressed the Okmulgee-Okfuskee Counties Medical Society in Henryetta, October 19, on "Diseases of the Floor of the Mouth" and "Chronic Ulcerative Colitis" respectively.—A symposium on pain in the back was presented before the Tulsa County Medical Society, Tulsa, November 23, by Drs. Pierre N. Charbonnet, Frank A. Stuart Jr., Ned R. Smith and Henry S. Browne.

## OREGON

**University Faculty Changes.**—Dr. Edwin E. Osgood, assistant professor of biochemistry and medicine, University of Oregon Medical School, Portland, has been appointed head of a newly established division of experimental medicine. Dr. J. Guy Strohm has been made clinical professor of urology and acting head of the division of urology and Dr. William K. Livingston has been appointed assistant professor of surgery.

## PENNSYLVANIA

**Society News.**—Dr. Joseph V. Missett Jr., Philadelphia, addressed the Dauphin County Medical Society, Harrisburg, November 3, on "Hemorrhage Complicating Late Pregnancy."—Dr. James M. H. Rowland, Baltimore, will address the Harrisburg Academy of Medicine, December 15, on "Accidental Complications of Pregnancy, Stressing Heart Disease and Tuberculosis."—Dr. Joseph H. Barach, Pittsburgh, addressed the Medical Society of Franklin County at Chambersburg, November 17, on hypertension.

## Philadelphia

**Hospital News.**—The twenty-fifth anniversary of the founding of the Babies' Hospital of Philadelphia was celebrated at a dinner, November 17, at which the speakers included Drs. Philip Van Ingen, New York, and Borden S. Veeder, St. Louis.

**Society News.**—At a meeting of the Philadelphia Clinical Association, December 1, the speakers were Dr. Leopold S. Vaccaro, on "The Medicolegal Aspects of the Pennsylvania Compensation Act and Its Need for Liberalization," and Mr. James M. Grundy, district representative of the state workman's insurance fund, "The Doctor and the Insurance Company in Insurance Cases."—A symposium on vaginal hysterectomy was presented at a meeting of the Obstetrical Society of Philadelphia, December 3, by Drs. Leonard Averett and John A. McGlenn; Dr. Newlin F. Paxson described English clinics.

## SOUTH CAROLINA

**Society News.**—The South Carolina X-Ray Society held its first annual meeting in Charleston, November 5. The speakers, all of Charleston, were Dr. Robert B. Taft, on super-voltage therapy installations; Drs. T. Hutson Martin and Augusta E. Willis, treatment of cancer of the breast; J. Hampton Hoch, Sc.D., effects of normal and abnormal irradiation; Dr. Hillyer Rudisill Jr., skin reaction and skin recovery; Dr. Thomas M. Peery, grading of tumors, and Dr. Harold Wood, microscopic changes in tumors following irradiation.

## TEXAS

**Faculty Changes at Baylor.**—Among changes announced at Baylor University School of Medicine, Dallas, at the opening of the school year were the following promotions:

Dr. Christopher B. Carter, to be associate professor of applied anatomy and clinical surgery.  
Dr. James H. Black, to be professor of clinical medicine (allergy).  
Robert W. Lackey, Ph.D., to be associate professor of physiology.  
Dr. Walter W. Brandes, to be associate professor of pathology.  
Dr. Robert F. Short, to be assistant professor of clinical surgery.  
Dr. J. Warner Duckett, to be assistant professor of clinical surgery.  
Dr. Oscar M. Marchman, to be associate professor of clinical otolaryngology.

**District Meetings.**—At the thirty-first annual meeting of the Fourth District Medical Society in San Angelo, October 21-22, the speakers included Drs. Maurice C. Barnes, Waco, on "Management of Allergic Patients"; Paul Gallagher, El Paso, "Empyema"; Lee J. Guber, San Antonio, "Treatment of Sterility," and Floyd T. McIntire, San Angelo, "Treatment of Pneumonia by X-Rays." Dr. Howard R. Dudgeon, Waco, president of the Texas State Medical Association, was the guest speaker, on "The Trend Toward Socialization of Medicine and How to Check It."—Speakers on the program of the Eleventh District Medical Society, October 13, included Drs. Joseph H. Paxton, Elkhart, on "Diagnosis of Cholecystitis and Cholelithiasis"; Jack F. Perkins, Dallas, "Diagnosis and Treatment of Oligemia and Oligocythemia," and Alfred I. Folsom, Dallas, treatment of gonorrhea in the male.

## WASHINGTON

**Society News.**—Dr. Claude E. Dolman, Vancouver, B. C., addressed the Pierce County Medical Society, Tacoma, October 13, on "Staphylococcus Toxoid."—Dr. Otis F. Akin, Portland, Ore., addressed the Walla Walla Valley Medical Society, Walla Walla, November 12, on "Foot Pains, Their Cause and Treatment from the General Practitioner's Viewpoint."—At a meeting of the Yakima County Medical Society, Yakima, October 12, the speakers, all of Seattle, were Drs. Ole A. Nelson, on "Cervical Infections in Relation to Urinary Tract Infections and Symptoms"; Delbert H. Nickson, "Pathology of Cervical Disease," and John E. Wirth, "Treatment of Carcinoma of the Cervix."

## WEST VIRGINIA

**Licensure of Foreign Physicians.**—The Public Health Council of West Virginia adopted a resolution recently governing the licensure of graduates of foreign medical schools. Under the regulation, which goes into effect January 1, a foreign graduate will have to prove that he is licensed to practice in the country of his graduation and that he has served a year's internship in an approved hospital or that he has completed the fourth year of medicine at an American class A medical college, as classified by the Council on Medical Education and Hospitals of the American Medical Association.

**Society News.**—Dr. I. Newton Kugelmass, New York, addressed the Ohio County Medical Society, Wheeling, November 6, on "Management of Hemorrhagic Diseases in Children."—Dr. Everett C. Drash, Charlottesville, Va., addressed the Mercer County Medical Society, Princeton, October 29, on "The Present Status of Thoracic Surgery."—Drs. Daniel P. Foster and Joseph A. Johnston, Detroit, addressed the medical societies of Marion, Harrison and Monongalia counties in Fairmont, October 27, on "Dietotherapy" and "Cerebral Hemorrhage in the New-Born" respectively.—Dr. Morris Fishbein, Chicago, editor of THE JOURNAL, will address the Grant-Hampshire-Hardy-Mineral Counties Medical Society, Romney, December 19, in a meeting with the Allegany-Garrett Counties Medical Society of Maryland.—Drs. Frank C. Hodges and Ray M. Bobbitt, both of Huntington, addressed the Cabell County Medical Society, November 12, on "Testicular Teratoma."—Drs. Herbert H. Haynes and Walter W. Spelsberg, Clarksburg, addressed the Central West Virginia Medical Society at Buckhannon in October on "Operations for Cancer of the Rectum" and "Conservative Diagnosis of Sinus Disease" respectively.—At a meeting of the Raleigh County Medical Society in Beckley, November 16, Dr. Roy M. Hoover, Roanoke, Va., spoke on "Ununited Fractures."

## WISCONSIN

**Society News.**—Dr. Edward A. Oliver, Chicago, addressed the Outagamie County Medical Society, Appleton, November 12, on dermatologic problems of the general practitioner.—Dr. Walter A. Schiller, Vienna, Austria, addressed the Brown-Kewaunee-Door Counties Medical Society, at Green Bay, November 7, on early diagnosis of cancer in women.

## GENERAL

**Science Exhibition.**—The annual science exhibition of the American Association for the Advancement of Science will be held in the Atlantic City Auditorium, December 28-January 1. The progress of science will be depicted in an illuminating manner by scientific groups, commercial exhibitors and the leading publishers of books, and many authors and writers in science will be present.

**Prize for Study on Goiter.**—The American Association for the Study of Goiter again announces a competition for the Van Meter prize of \$300 and two honorable mentions for the best essays submitted describing experimental and clinical investigations of the thyroid gland. The award will be made at the annual meeting of the association in Detroit, June 14-16, 1937. Manuscripts should be sent to the secretary, Dr. W. Blair Mosser, 133 Biddle Street, Kane, Pa., not later than April 1, 1937. They must be in English and typed double space.

**Academy of Tropical Medicine.**—Dr. Wilbur A. Sawyer, director of the International Health Division of the Rockefeller Foundation, New York, was elected president of the American Academy of Tropical Medicine at its third annual meeting in Baltimore, November 18. Dr. Ernest Muir, London, secretary of the British Empire Leprosy Relief Association, addressed the academy on "Recent Progress in Tropical Medicine in India." Dr. Richard P. Strong, Boston, retiring president, made his official address on "The Modern Period of Tropical Medicine."

**Society News.**—Dr. Mark F. Boyd, Tallahassee, Fla., was chosen president-elect of the American Society of Tropical Medicine at the annual meeting in Baltimore, November 18-20. Dr. Herbert C. Clark, Panama, R. P., was installed as president; Karl F. Meyer, Ph.D., San Francisco, was elected vice president, and Dr. Noel Paul Hudson, Columbus, Ohio, reelected secretary.—Dr. Frederic Brodie, Vancouver, B. C., was made president of the North Pacific Surgical Association at its twenty-fifth annual meeting in Tacoma, Wash., November 20-21. Other officers elected included Drs. Andrew A. Matthews, Spokane, Wash., first vice president; Gordon Kenning, Victoria, B. C., second vice president, and Karl H. Martzloff, Portland, Ore., secretary. Dr. Leo Eloesser, San Francisco, was the guest speaker.

**Changes in Status of Licensure.**—The Michigan State Board of Registration in Medicine reports the following action:

Dr. William D. Rea, Minneapolis, license revoked for unprofessional and dishonest conduct.

Dr. Douglas Hurst Radcliff, Detroit, license suspended until June 1937, pending a hearing when he will be cited to show cause why his medical license should not be revoked for his conviction of "the procuring, aiding or abetting in procuring a criminal abortion."

The Minnesota State Board of Medical Examiners, St. Paul, reports the following:

Dr. William M. Chowning, Minneapolis, license revoked November 7 for his conviction on the charge of abortion.

Dr. Frederic H. Moss, Roseville, Ill., license revoked November 7 for habitual indulgence in the use of narcotics.

The Colorado State Board of Medical Examiners reports the following action:

Dr. Earnest O. McCleary, Ordway, license restored.

**Grocers Make Award to Dr. Minot.**—The Associated Grocery Manufacturers Association of America, at their annual banquet on December 1 at the Waldorf-Astoria Hotel, New York City, presented to Dr. George R. Minot, Boston, their annual award for research in the field of nutrition leading to the prevention of disease and the advancement of health. The selection of Dr. Minot was made by the following advisory committee:

George R. Cowgill, Ph.D., Yale University, New Haven, Conn., chairman.

Dr. James S. McLester, Birmingham, Ala., Past President of the American Medical Association.

Dr. George W. McCoy, Director of National Institute of Health, United States Public Health Service, Washington, D. C.

Mary S. Rose, Ph.D., Columbia University, New York.

Leonard A. Maynard, Ph.D., Cornell University, Ithaca.

The presentation address was made by Dr. Morris Fishbein, Chicago, editor of THE JOURNAL.

**Diagnostic Atlas of Tumors.**—Announcement is made of the preparation of an "International Diagnostic Atlas of Tumors" under the direction of a committee of the International Union Against Cancer. The committee was originally appointed to consider standardization of nomenclature of neoplasms, but after several meetings it was decided that there would be no advantage in attempting to establish by fiat a standard nomenclature when specialists are not agreed about many designations. It was therefore agreed to publish the atlas showing photomicrographs of neoplasms and including in

the text the most frequently used names. The classification will be anatomic rather than by types of tumors. The volume will contain about 400 or 500 pages of halftones and an equal number of descriptive text. The expense of publication is to be borne by the Chemical Foundation. The probable price will be about \$8. Dr. Francis Carter Wood, New York, has been appointed editor for the English edition.

**Association for Research in Nervous and Mental Diseases.**—The annual meeting of the Association for Research in Nervous and Mental Diseases will be held at the Waldorf-Astoria in New York, December 28-29. The entire program of more than forty papers will be devoted to considerations of the pituitary gland. Among the speakers will be:

Dr. Frederick Tilney, New York, Glands of the Brain, with Special Reference to the Pituitary.

Andrew T. Rasmussen, Ph.D., Minneapolis, The Proportions of the Various Subdivisions of the Normal Adult Human Hypophysis Cerebri.

Dr. Herbert M. Evans, Berkeley, Calif., The Growth Hormone.

Dr. Hector Nottmeyer, Montreal, Skull Formation in Relation to the Pituitary Gland.

Dr. Cyril N. H. Long, New Haven, Conn., Carbohydrate Metabolism in Relation to the Pituitary Gland.

Dr. James B. Collip, Montreal, Antihormones.

Dr. Louis A. Lurie, Cincinnati, Pituitary Disturbances in Relation to Personality.

Dr. Gilbert Horrax, Boston, Surgical Treatment of Pituitary Neoplasms.

Dr. Eberle Kost Shelton, Santa Barbara, Calif., Pituitary Dwarfism.

**Conference on College Hygiene.**—The second National Conference on College Hygiene will be held in Washington, D. C., December 28-31, at the Wardman Park Hotel. The conference aims to bring up to date information relating to the findings and recommendations of the first conference, which was held in 1931 at Syracuse University. The sessions will be discussion meetings with no prepared addresses. The work is divided into five sections with chairmen as follows: health service, Dr. Warren E. Forsythe, Ann Arbor, Mich.; health teaching, Mrs. Kathleen W. Wootten, Georgia State College for Women, Milledgeville; organization and correlation, Dr. Thomas A. Storey, Stanford University, Calif.; special problems, Dr. Jesse F. Williams, Columbia University, New York, and relation of college hygiene to teacher training and secondary schools, Dr. John Sundwall, Ann Arbor, Mich. The conference is under the sponsorship of the American Student Health Association, the Presidents' Committee of Fifty on College Hygiene and the National Health Council. Dr. Livingston Farrand, president of Cornell University, Ithaca, is president of the conference and Dr. Hugh S. Cumming, former surgeon general of the U. S. Public Health Service, is chairman of the local committee on arrangements.

**Southern Surgical Association.**—The forty-ninth annual session of the Southern Surgical Association will be held at the Edgewater Gulf Hotel, Edgewater Park, Miss., December 15-17. Guest speakers listed on the program include:

Dr. George J. Heuer, New York, Surgical Treatment of Cholecystitis.

Dr. Frank H. Lahey, Boston, Strictures of the Common and Hepatic Duct.

Dr. Frederick A. Collier, Ann Arbor, Mich., Treatment of Typhoid Carriers by Cholecystectomy.

Dr. John deJ. Pemberton, Rochester, Minn., Regional Ileitis.

Dr. William L. Estes Jr., Bethlehem, Pa., Enteritis of the Obstructed Loop After Entero-Anastomosis for Intestinal Obstruction.

Dr. Willis D. Gatch, Indianapolis, The Technic of Closing Perforated Ulcer of the Duodenum.

Dr. Donald C. Balfour, Rochester, Minn., Factors of Significance in the Prognosis of Cancer of the Stomach.

Dr. Roy D. McClure, Detroit, A Study of 252 Consecutive Cases of Acute Perforated Appendicitis with Peritonitis.

Dr. Mont R. Reid, Cincinnati, Wound Healing.

Dr. Donald Guthrie, Sayre, Pa., Dangers of Avertin Anesthesia.

The association dinner will be held Wednesday evening, with Dr. Hubert A. Royster, Raleigh, N. C., as toastmaster. Dr. Harvey B. Stone, Baltimore, will give the presidential address on "Wider Horizons for the Surgeons." There will be a golf tournament on the Edgewater Golf Course, Tuesday afternoon.

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Government Services

## Captain Armstrong Wins Wellcome Prize

Captain Harry G. Armstrong, U. S. Army Medical Corps, director of the physiologic research laboratory at Wright Field, Dayton, Ohio, was awarded the Wellcome Prize at the annual meeting of the Association of Military Surgeons of the United States for an essay on "The Importance of Coordinating the Military and Naval Medical Services with the Civilian Medical Profession." The prize of \$500 and a gold medal were presented at the annual meeting of the association in Detroit, October 29-31. Captain Armstrong was graduated from the University of Louisville School of Medicine in 1925.

## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Oct. 31, 1936.

#### The British Pharmacopeia

A new edition of the British Pharmacopeia is published every ten years. In the interval the work is kept down to date by the issue of addenda from time to time. An addendum containing important new material is announced by the Pharmacopeia Commission, which has found it necessary to exclude on account of proprietary monopolies or restrictions certain drugs that otherwise might have been included. Two pentavalent arsenical compounds—acetarsol for oral administration and tryparsamide for subcutaneous injection—are added. For cod liver oil a minimum standard of 600 units of vitamin A activity and 85 of antirachitic is now required. Vitamin B is represented by pulvis vitaminii B<sub>1</sub>, an adsorbate of the antineuritic vitamin on fuller's earth, containing in 1 Gm. 100 units of antineuritic activity. Vitamin C is described as ascorbic acid (cevitamic acid) and must contain not less than 98 per cent of the pure compound as ascertained by titration with iodine. Vitamin D is now represented by calciferol, obtained by ultraviolet irradiation of ergosterol. One mg. has to contain 40,000 units of antirachitic activity. Five new preparations of antitoxins and serums are described. Serum, dried serum, solution of antitoxic globulins and dried antitoxic globulins are recognized. Antitoxinum oedematiens contains the specific antitoxic globulins against the toxin of *Clostridium oedematiens*; antitoxinum staphylococcicum, against certain strains of staphylococcus; antitoxinum vibrio-septicum, against *Clostridium*, generally known as "vibrio septique." Antipneumococcus serums for type I and type II are given and the dosage in each case is from 50 to 150 thousand units. Two new compounds of bismuth are introduced in view of the use of injections—bismuth and sodium tartrate (containing from 35 to 42 per cent of bismuth) and bismuth oxychloride (containing from 79 to 81 per cent). The recent work on ergot is recognized by including the alkaloid ergometrine (ergonovine), for which the oral dose is from  $\frac{1}{120}$  to  $\frac{1}{60}$  grain (0.5 to 1 mg.). An organic mercurial diuretic, mersalyl, a sodium salt of a salicyl compound, is given. Chiniofon, a drug for the treatment of tropical dysentery, is described as a mixture of four parts of iodohydroquinoline sulfonic acid and one part of sodium bicarbonate. Citrated ferrous chloride, of which the dose is from 3 to 5 grains (0.2 to 0.3 Gm.) is introduced to supply a stable form of ferrous chloride which can be compressed into tablets. Sodium thio-sulfate is introduced on account of its use in the treatment of toxic effects from arsenical drugs and other heavy metals. Histamine acid phosphate, now used by subcutaneous injection to stimulate the secretion of hydrochloric acid for the fractional test meal, has been added. The maximum dose of cinchophen, of which the dangers have been again shown recently, is reduced to 10 grains (0.65 Gm.). The dose of iron and ammonium citrate is increased to from 20 to 40 grains (1.3 to 2.6 Gm.).

#### Increased Attention to Physical Education

The Board of Education, in fulfilment of the government's policy announced at the last general election, has sent a circular to the local education authorities dealing with the provision of suitable clothing and footwear for school children during games and other physical exercises. This circular is the last of four on physical education issued during the year by the board. The board is at present concentrating on the senior children between 11 and 14 or over. The new senior schools are well equipped for physical education, but improvement is needed in some of the older ones which have a playground but no playing

field or gymnasium. The more modern type of school has these. In 1921 a school for 1,000 children was thought to be well off with a site of 1½ acres; a new school for the same number now has 16 acres.

A well known educationist points out that every year thousands of graduates leave the universities, of whom 90 per cent would be better educated had their curriculum included physical education. He points out that where physical education is compulsory the students show educational as well as physical advantages compared with those for whom compulsion does not exist.

#### Message to Automobile Drivers

Mr. Hore-Belishs, the minister of transport, has written a personal message to drivers, which the local authorities are asked to issue when a license is renewed. He points out that last year there were 6,300 fatal accidents on our roads and that automobiles were involved in 5,700 of these. These accidents brought to death 6,500 people—nearly twenty a day. In most cases the driver's action was not criminal, but deaths were generally due directly or indirectly to an automobile. "If you will help in securing a higher standard of care we shall get at once a big reduction. Be prepared for the mistakes of others. Children cannot judge as well as grown-ups and they often forget the need for caution; their safety then depends on you. Nearly 900 children under the age of 11 were killed last year. Elderly people may be slow in hearing, thinking or moving; they must partly depend on you for safety. Nearly 1,500 persons over 60 were killed last year. Cyclists are apt to swerve; give them plenty of room. Nearly 1,400 pedal cyclists were killed last year. The most dangerous times are from 5 to 6 p. m. and from 10 to 11 p. m. The most dangerous day is Saturday; but please be cautious all the time. Most accidents occurred at times or places which are not themselves dangerous, on straight roads and in good light. It is not to blame one lot of persons or another that all these particulars of accidents are brought together, but for our guidance and yours."

### PARIS

(From Our Regular Correspondent)

Oct. 31, 1936.

#### Congress of Internal Medicine—Curable Meningitis

The twenty-fourth annual session of the French Congress of Internal Medicine was held at Paris October 12-14. The president for this session was Prof. Marcel Labbé. The two topics chosen for discussion were (1) acute curable forms of meningitis and (2) the parathyroid syndromes.

The first paper on acute curable forms of meningitis was on acute benign meningitis in adults and was read by Roch of Geneva, who first enumerated a large number of known or probable causes for the majority of cases. There exists also a smaller group (cryptogenic form) in which the etiology still remains obscure. Roch has observed thirteen cases belonging in the second group since 1923 and collected a number published by others. The acute curable form of meningitis, which Roch terms "benign lymphocytic meningitis," occurs predominantly in adults and adolescents. The onset is sudden, the appearance of prodromal symptoms being exceptional. The signs of a frank meningitis such as severe headache, Kernig sign, vomiting, and rarely constipation are the salient features. Symptoms of involvement of the optic and other cranial nerves, as well as absence of the Babinski reflex, are exceptional. Delirium is rarely noted and coma still less often. The headache is much less marked after lumbar puncture. Accompanying the symptoms of a meningitis are those of a generalized infection in the form of chills and fever of moderate degree. The duration of the disease varies from five to eight days, rarely longer. The cerebrospinal fluid is opalescent or clear and the majority of the cellular elements are lymphocytes

Cultures and animal inoculations are negative. The albumin content seldom exceeds 0.5 Gm. The globulin reaction is positive, whereas the chloride and dextrose percentage remains normal.

The clinical symptoms and results of laboratory studies enable one to exclude a tuberculous meningitis. As to the cause of this curable form of meningitis, one must consider hereditary predisposition, possibility of syphilitic or tuberculous infection, spirochetosis, previous anaphylactic manifestations, injury, insolation, mumps, herpes, focal infection and intestinal parasites. The acute benign lymphocytic form of meningitis is not related to poliomyelitis, as has been claimed. It is rather a meningeal form of epidemic encephalitis. This is shown by the fact that the majority of cases have been observed during the height of an encephalitis epidemic.

The second paper in the symposium on acute curable meningitis was by Lesné of Paris and Boquien of Nantes, entitled *Curable Lymphocytic Meningitis in Children*, which most commonly occurs between the ages of 5 and 12 years. The portal of entry is the nasopharynx and the clinical picture is quite typical. The onset, as a rule, is acute but it may be even hyperacute, which differentiates it from that of a tuberculous meningitis. The headache at the onset is extremely severe, mostly in the occipital region and accompanied by vomiting. Cases presenting prodromal symptoms are seldom seen. Examination of the child reveals marked signs of a meningitis, such as rigidity of the neck and the Kernig sign in its two forms. The tendon reflexes are normal in some cases and only a little exaggerated in others. The skin reflexes show slight change and one never finds a Babinski sign. Cutaneous hyperesthesia is striking, but vasomotor changes are less marked than in tuberculous meningitis. Photophobia is frequent and the fundus of the eye often presents a papillitis, edema of the papilla or stasis and at times even retinal hemorrhages. Some cases have been reported of paralysis of the ocular muscles. During the entire course, the temperature varies from 100 to 102 F. As a rule, the duration varies from two to four weeks. There are no evidences of stupor or coma. The main diagnostic feature is the result of the examination of the cerebrospinal fluid, which is clear but contains from 300 to 500 lymphocytes per cubic centimeter. This reaction decreases as the symptoms become more intense, thus differing in this respect from a tuberculous meningitis. The polymorphonuclears predominate at first and then the lymphocytes; hence the authors believe that it would be better to term the disease a "curable or benign serous meningitis." There is much less albumin content in the liquid than one would expect from the presence of so many leukocytes. Dextrose is normal and the chlorides are but little modified. With few exceptions the Wassermann reaction is negative but that of Dandy often positive. Bacteriologic examination is uniformly negative. Following lumbar puncture there is a remarkable recession of symptoms. There are typical cases in which the symptoms are as just described but with others (*formes frustes*) in which the diagnosis can be made only following the examination of the spinal fluid. Also "recurrent" cases have been observed which continue for months. The prognosis is favorable, sequelae being rarely seen. The differential diagnosis from a tuberculous meningitis is based on exposure to infection, prodromal period, "hostility" of the patient, signs of bulbar or basilar involvement, emaciation and stupor as being typical of a tuberculous meningitis. A negative skin and intradermoreaction also speaks against such causation. The higher albumin content of the spinal fluid and the finding of tubercle bacilli by stain, culture or inoculation make the differentiation an easy task. Up to now the etiology has been obscure, but recent studies make it seem probable that it is due to some form of virus. As to treatment, it is purely symptomatic.

In the discussion, Oelsnitz of Nice stated that the diagnosis was easy after several days of observation, but not at the onset. He believes that the changes in the dextrose content of the spinal fluid are of more value than those in the percentage of chlorides. In the curable lymphocytic form of meningitis the dextrose content is normal and, with few exceptions, remains so, whereas in a tuberculous meningitis the dextrose content constantly diminishes. Etienne Bernard emphasized the three salient features of a curable lymphocytic meningitis; viz. (1) the acute onset, (2) the intense (500-600) lymphocytic reaction in the spinal fluid and (3) negative skin reactions to tuberculin.

### The Medical Profession and the Department of Public Health

European France is divided into eighty-six departments or counties for purposes of administration. In each department there is a union or "syndicate" of physicians, which looks after the interests of its members, especially in the relations between the profession and the governmental agencies. The largest of these syndicates is that of the department of the Seine, in which Paris is situated. Every effort is being made by the medical profession all over France and its colonies to aid the government in its plan to improve the condition of the worker in accordance with the socialization plan introduced by the present ministry in June. The administrative council of the syndicate of physicians of the department of the Seine unanimously voted July 22 to offer its cooperation to the government by assuming responsibility for a program of prophylaxis of disease and protection of the health of the community. That such an offer will encounter many obstacles is evident in reading the discussion that took place before the resolution of cooperation was passed by the council of the syndicate. The plan of the latter is as follows:

A collective contract will be made between the government authorities and the profession to take charge of the socialized medicine program. This contract is to include:

1. The organization of social centers (one for each ward of Paris and one for each group of suburbs).
2. The organization of prophylaxis:
  - (a) In the private consultation offices of the practitioners.
  - (b) In public or private organizations already existing.

This problem of organization of prophylaxis includes antepartum and nursing clinics, periodic examination of children before and during school years, periodic examination of adults, and prophylaxis against tuberculosis, venereal diseases, mental diseases, variola, diphtheria, typhoid and cancer. For each of these special objectives, either the physician's private office or the existing bureaux will be organized so that the primary consideration will be to conserve the relation now existing between the family and the general practitioner so that the latter will not be deprived of his means of earning a living.

The social center will serve not only as an administrative center of coordination of social work but also as a bureau of information for those individuals who are covered by the social insurance law, a center of control and payment of premiums to the assured and a bureau of medicosocial statistics. No medical consultations will be given by these social centers. They will have as director a government official appointed by and responsible to the inspector of hygiene of the respective department. The social center head has under his control all the social assistants and hygiene officers of the department. A committee of coordination on which the local medical syndicate has a representative will meet at least once every three months to review the work of the social center.

A "maternity booklet" with detachable pages will be given to every pregnant woman. A minimum of three antepartum examinations must be recorded and the results sent either to the social insurance authorities in the case of those women

who are covered by this law or to the social center in the case of noninsured women. If the latter have consulted a private physician, they will be reimbursed for any medical fee by the social bureau.

Every citizen from birth to death ought to have recorded in a booklet the various ailments for which he has received medical attendance. No such law exists as yet for every one in France, although the keeping of such a book is made obligatory for children who are wards of the state. If this should be applied universally, the records of periodic examinations could be inscribed and be of great value as the child grows older.

Between the ages of 6 and 14 years, the examination of school children is well organized in the department of the Seine, but little attention is paid to those above this age in the public schools. Recently the question of obligatory periodic (every six months) examinations at health centers for all pupils above the age of 14 years has been discussed. The syndicate believes that every practitioner, no matter whether a school inspector or not, should be permitted to make such examinations. This would be of great value if every pupil had a "health book" (*livret de santé*) kept up since birth.

According to the social insurance law, periodic health examinations of adults are supposed to be made every five years, but, in spite of the frequent demands of organized medicine to carry out this provision of the law, the authorities have thus far refused to do so. The Medical Syndicate of the Seine believes that such periodic examinations can be made by the family physician with the aid, as the necessity arises, of specialists. For those unable to pay, the public clinics are always ready to help. All such periodic health examinations should be recorded in the health book, which is to remain in the possession of the applicant.

The present organizations in the department of the Seine are adequately equipped to fight tuberculosis, but there are still a number of individuals who hesitate to apply for examinations in the special dispensaries and hospital services. Antivenereal and mental disease prophylaxis is well organized. Vaccination against typhoid, variola and diphtheria is, as a rule, carried out by practitioners, but the council suggested that it would be advisable to have these recorded in the health book if the latter innovation is made obligatory.

#### PROPOSED PREVENTIVE MEDICINE ORGANIZATION

The objective of the control should be to maintain a close surveillance not only of the already existing organizations but also of the work of the general practitioner who is to aid in the proposed preventive medicine plan. This control should include:

1. An administrative control by the social centers of both the existing organizations and practitioners. The work of the latter ought to be chiefly diagnostic and not therapeutic.

2. Technical control by the syndicate or medical union (of the department of the Seine) of the prophylactic work carried out in the offices of the practitioners.

One of the principal objections to this plan of enlisting the profession in this preventive medicine work is that it will entail a vast outlay of money by the state and local governments. The syndicate, however, is of the opinion that the results obtained would justify this expense, and such a method of handling the problem would avoid the less welcome threatened assumption of the task of prophylaxis by the state with construction of many new buildings as state health centers and the creation of a horde of office holders. In addition, the general practitioner would be able to make a living, which is not an easy task at present in France. The plan would not deprive him of the privilege to treat patients. Only those physicians who are members of a syndicate or medical union will be permitted to participate in this collective contract with

the state to take charge of preventive medicine. The fee table will be arranged between the state and the syndicates.

In the discussion on the plan, the question was raised as to how it would be possible to limit the work of the social centers to prophylaxis and not invade the field of treatment. The opinion of many was that this would be impossible and thus, in the end, the general practitioner would be the sufferer, because in many diseases, such as tuberculosis or syphilis, the prophylaxis must inevitably be followed by treatment.

#### BERLIN

(From Our Regular Correspondent)

Oct. 12, 1936.

#### Investigation of the Divining Rod Problem

The National Health Bureau has published a report on the results of an investigation, carried on under its direction, of the whole question of divining rods and earth rays. This report constitutes a noteworthy answer to the many assertions that have been made with regard to these matters.

In November 1933 the National Health Bureau in a "warning against the purchase of screen apparatus, electric spark devices and the like" had taken a stand on the question of whether there exist (as the dousers insist) a type of rays noxious to health, the proof of which it is supposedly possible to establish by the aid of divining rods, certain physical apparatus serving as a substitute for such rods or by peculiar sensory reactions of individual persons. At that time the National Health Bureau mentioned how public health might be jeopardized through misleading propaganda having to do with this "Earth Ray Theory." It was then deemed necessary to launch a large scale offensive against this source of disturbance among the population.

The National Bureau of Health set about organizing various commissions composed of a large number of professional representatives of all interested branches of science together with several members of the "National League for Rhabdomantic Affairs"; that is, actual well known dousers. The inquiry was carried out with complete lack of bias. It was held to be particularly desirable that the participating dousers and inventors of dousing apparatus should be allowed every possible consideration compatible with the approved fundamentals of scientific research work.

The following working basis was established for this cooperative investigation: It has been asserted by many rhabdomancers that so-called earth rays emanate from springs of water and from certain subterranean geological surroundings, and further that the action of these rays on living organisms may be the cause of impaired health and even of distinct diseases. The virulence may also be influenced by the "earth rays." The most divergent opinions with regard to the nature of these forces are entertained by persons who profess to believe in their existence; now the explanation is based on electrical influences, now on magnetic influences or on radiations of a corpuscular nature. No proof of the validity of a single one of these various hypotheses has to date been adduced by the adherents of the "Earth Ray Theory."

A physical confirmation of the existence of "earth rays" has not been forthcoming despite the fact that scientific research on radiant energy has made such great advances in recent years. And most certain it is that within the entire realm of the electromagnetic wave spectrum, from the hardest gamma rays to the electric waves, there are present none but the physically recognized and studied categories of rays.

As proof of the existence of "earth rays" there are adduced on the part of the rhabdomancers their own subjective reactions, reactions that cannot be verified by objective criteria. A majority of these reactions may be explained on the basis of anticipatory or wishful ideas. Then, besides, there is the alleged

deflection of the divining rod, which is supposed to take place without any conscious or unconscious influence being exerted. But for this phenomenon too a scientifically authenticated demonstration has yet to be recorded.

Different varieties of physical apparatus are also supposed to serve for demonstrations of the "earth rays." The measuring principles of this apparatus are based on the most disparate concepts of the nature of the "radiation." And finally there are certain devices that appear absolutely senseless to the scientist and which are supposed to screen off the so-called earth ray; in other words, remove the noxious influence from human beings, animals and plants.

The commissions whose task it was to elucidate the whole matter of "earth rays" and divining rods had accordingly to seek answers to the following questions: 1. Is there such a thing as a specific demonstrable deflection of a divining rod? 2. Is there any relation whatever between the "earth ray zones" delineated by the dousers and the state of health of the men and animals living therein? Is the culture of bacteria influenced by these "earth rays"? 3. Is it possible to check the claims of the dousers by means of the physical apparatus which are supposed to possess the same virtues as the divining rod? 4. Provided "earth rays" exist, is there any contrivance by which they could be screened off?

The answers, formulated in the course of this inquiry, turned out to be altogether in the negative: 1. (a) The observations of several approved dousers on "earth ray zones" (so-called irritant zones) in the same general region failed to exhibit any correspondence. (b) The data on "earth ray zones" of a certain region supplied by individual dousers were not consistent on repetition of the tests. 2. (a) The observations of various dousers on the alleged cancer-producing earth emanations present in dwellings fail to demonstrate any correlation whatever between the alleged "irritant striae" and the incidence of actual statistically recorded cases of cancer. As for the so-called cancer houses, which, according to the dousers, are supposed to present peculiar dangers for persons dwelling in them, proof of their existence is utterly lacking. (b) Furthermore, no pathogenic influence on animals of the hypothetical "earth ray" could be detected by means of the divining rod. "Irritant striae" were detected in the stables of healthy live stock quite as frequently as in the quarters of less healthy beasts. (c) In animal experimentation with the most diverse agents of infection, no influence on the virulence was observable that could be attributed to "earth rays." 3. The apparatus (termed "objective divining rods") suitable for demonstrating the existence of "earth rays," so far as they were inspected by us, were found to be completely useless, the claims of the manufacturers notwithstanding. 4. Since, therefore, no proof has been advanced that confirms the existence of a pathogenic radiation supposedly detectable by the aid of a divining rod or equivalent apparatus, any question of screening off the "rays" is altogether meaningless. Moreover, no screening device examined by us and put to the test by various dousers showed any demonstrable influence whatever, either on the divining rod or on the indicators of the instruments. 5. Finally, the claim that the divining rod is able to detect foci of disease in men and animals was examined. No corroborative evidence was forthcoming. There was no difference manifested between the deflections of the rod in the presence of healthy or of sick animals.

The dangers to public health as described in the observations of the dousers cannot, according to the National Bureau of Health, as yet be demonstrated by any evidence worthy of belief. Nor has the investigation sponsored by the bureau been able to bring to light the slightest proof of the actual existence of alleged "earth rays" pathogenic in nature and particularly likely to cause cancer. Assertions to the contrary current in certain circles are to be regarded as the outgrowth of irrational popular apprehensions.

## NETHERLANDS

(From Our Regular Correspondent)

Oct. 23, 1936.

### Water Supplies in the Netherlands Indies

The journal *Water* has recently published some interesting data on water supplies in the Netherlands Indies. Three types of supply are distinguished, according to origin: spring water, underground water and surface (river) water. Spring water requires the minimal treatment. Towns that receive their water from springs are generally located in the mountains; for example, Bandoeng, Malang, Soekaboemi, Buitenzorg, Magelang and Tandjoer, all in Java, Fort de Kock and Padang Sidempoean in Sumatra and Den Paser-Tabanan on Bali. Certain communities not far distant from the mountains also receive spring water: Semarang, Djokja, Tegal, Solo, Pasoeroean and Medan. In addition, the importance of the cities of Batavia and Surabaya justifies the use of spring water, which is transported to these places at great expense. The waters of the seven springs that serve Bandoeng vary in composition. The water from three of these springs is hard and it also requires aeration. The waters of two other springs are moderately hard and are aerated and filtered through marble. Waters of the two remaining springs are soft and are also filtered through marble.

As for the underground waters, if they are not located at too great a depth (as at Madioen and Kediri) they are pumped up to high reservoirs and deacidified by aeration. In other places the water is procured from artesian wells. A part of Bandoeng's water supply is of artesian origin and has caused no end of trouble, owing to deposits of manganese in the pipe lines. Installation of an experimental plant for aeration and for filtration through coarse sand did not at first produce favorable results, but at the end of a year enough pyrolusite had been deposited on the sand to allow catalytic oxidation of the manganese compounds.

The river waters differ from those of Europe. They are yellowish brown, seldom transparent and often extremely turbid. The powerful influence of insolation and the rapidity of the current are factors that contribute to a good biologic purification, but the pollution of the river banks is such that bacteriologic conditions are no better than those of the European surface waters. In high valleys, at Banka for example, slow filtration through sand may be successfully practiced. At Benkoelen the water is soft and so deficient in carbon dioxide that the addition of lime is inoperative and it is necessary actually to add carbon dioxide. At the same time the attempt is made to obtain coagulation in an alkaline medium. The use of sodium bicarbonate makes possible the deposit of a layer of calcium carbonate, which serves as a protection to the conduits. At Samarinda the presence of humic acid is combated by coagulation with aluminum sulfate.

The water is everywhere sterilized with chlorine, but owing to the heightened temperature of the water, chlorine may disappear rapidly and a new multiplication of bacteria take place. Chloramine, although less effective than free chlorine, represents an improvement over the latter, since it is retained in the water for a longer period.

### The Fight on Ancylostomiasis

Dr. Josephus, speaking at the International Bureau of Public Hygiene, described the campaign against ancylostomiasis and the truly marvelous result obtained; namely, the complete disappearance of the disease in question.

In 1906 a carefully planned body of legislation for the operation of mines was established by royal decree. One section of these statutes dealt wholly with antiancylostomiasis measures: it provided for the medical examination of all miners and stipulated how frequently such examination should take place and the routine to be followed. Furthermore, the law prohibited

the hiring of any miner who was an ascertained carrier of *Ancylostoma* in the form of the worm, the eggs or the larvae. Specific clauses also governed the construction of lavatories, water closets and so on at the surface of a mine as well as the use of receptacles for excreta below ground. The latter were to be emptied and cleaned only at the surface and never within the mine proper.

This antiancylostomiasis legislation of 1906 remained in force until 1925. By that time it was conceded that the disease had disappeared and the danger no longer existed. There remained only an insignificant number of carriers of eggs or larvae and these persons could be easily detected by the medical service without recourse to any special measures.

Although no longer impelled so to do by legal obligations, the medical service of the miners remains sedulous and continues its observations. The service is so organized that no diseased or suspected person can escape supervision and examination.

Under date of March 1936 Dr. Vossenaar, superintendent of medical service in the mines, writes approximately as follows: "In 1930 an examination of 4,997 specimens from those miners who were deemed to have been most exposed to infestation took place under my direction. Among these miners there were discovered two carriers of worms or of larvae. These two men, foreigners both, were not ill and treatment was successfully administered. For various reasons, research activity in this sphere has ceased but the organized medical service is still entrusted with the detection of such cases as in the course of time may present themselves. Moreover, foreign miners are no longer hired. This report, although of the briefest, is none the less revealing as it demonstrates above all how, by the application of prophylactic measures and sanitary precautions, the danger of ancylostomiasis in mines may be eliminated. The general condition of the mines throughout the Netherlands is excellent: the most rigorous cleanliness possible prevails, the ventilation is more than sufficient, dampness is lacking and the underground temperature is never too high."

## Marriages

HOBART McVICKER AGNEW, Montclair, N. J., to Miss Alice P. Himmelsbach of New York, October 10.

JOSEPH SLOAN BELL to Miss Elizabeth Webb Russell, both of Hoopeston, Ill., in Chicago, December 3.

FLORENCE ELIZABETH AHLFELDT to Mr. Samuel Parke Rogers, both of Philadelphia, October 24.

EDWARD VALENTINE SEXTON, Teaneck, N. J., to Miss Anna Mary Murphy of Jersey City, recently.

MYRON B. ALLEN, Hoschton, Ga., to Miss Ruth Lott of Braselton, at Walhalla, S. C., recently.

WILLIAM T. SHELL JR., Corsicana, Texas, to Emma Jean Smith Lock of Mexia, October 14.

ALTUS B. HARVEY to Mrs. Inez Sylverstein Whittle, both of Tylertown, Miss., November 7.

RONALD F. MARTIN to Miss Mary Ellen McLaughlin, both of Sioux City, Iowa, October 15.

RUDOLPH ANGELL to Miss Irma Marilyn Goldstein, both of Rochester, N. Y., August 31.

ABRAHAM M. SCHAEFER to Miss Alice Leavitt, both of Hartford, Conn., September 27.

ABRAHAM ZLOTNICK to Miss Jeanne Gruberman, both of New York, November 26.

THOMAS F. AHEARN JR., Chicago, to Miss Mary Doolin of Hammond, Ind., recently.

CRAIG D. ELLYSON, Waterloo, Iowa, to Miss Johanne Wilkens of Chicago, October 26.

HARRY S. GOOD, Womelsdorf, Pa., to Miss Julia O'Dell of Pottstown, October 1.

CLAUS H. ROBOTHM to DR. DOROTHY MARIE BAUER, both of Brooklyn, October 9.

PETER A. ROSI to Miss Gina Vanna, both of Chicago, recently.

## Deaths

**Willis Fastnacht Manges** ☉ Philadelphia; Jefferson Medical College of Philadelphia, 1903; chairman of the Session on Radiology in the Section on Miscellaneous Topics of the American Medical Association, 1923-1924; professor of roentgenology at his alma mater; served during the World War; fellow of the American College of Physicians; member, secretary, 1914-1916, president in 1918, and chairman of the executive council in 1924 and 1930, of the American Roentgen Ray Society and member of the American College of Radiology; formerly on the staffs of the Philadelphia General Hospital and chief roentgenologist to the Bryn Mawr (Pa.) Hospital; aged 59; was awarded an honorary doctor of science by Gettysburg College in 1928; on the staff of the Jefferson Medical College Hospital, where he died, November 24, of coronary occlusion.

**Edward Reynolds**, Boston; Harvard University Medical School, Boston, 1885; chairman of the Section on Obstetrics, Gynecology and Abdominal Surgery of the American Medical Association, 1915-1916, and member of the House of Delegates in 1921; member of the Massachusetts Medical Society; fellow of the American College of Surgeons; at one time vice president and chairman of the board of directors of the American Society for the Control of Cancer; past president of the American Gynecological Society; formerly on the staffs of the Massachusetts General Hospital, Boston Lying-in Hospital and the Boston City Hospital, at one time director of the Peabody Museum of Archaeology and Ethnology of Harvard University; aged 76; died, October 16.

**Thomas Craig Redfern** ☉ Winston-Salem, N. C.; Long Island College Hospital, Brooklyn, 1916; served during the World War; fellow of the American College of Physicians; past president and secretary of the Forsyth County Medical Society; formerly councilor of the eighth district of the Medical Society of the State of North Carolina; associate on medical service, City Memorial and North Carolina Baptist hospitals; member of the board of governors of the Forsyth County Tuberculosis Sanatorium; aged 44; died, October 16, of coronary thrombosis.

**Robert J. Gibson** ☉ Lieut. Col., U. S. Army, retired, New Haven, Conn.; Yale University School of Medicine, New Haven, 1879; entered the regular army as an assistant surgeon in 1880; appointed a captain in 1885; was made a major in the M. C., U. S. Army, in 1898; retired with rank of lieutenant colonel in 1910 for disability in line of duty; veteran of the Spanish-American and Indian wars; aged 81; died, October 9, of cystitis and uremia.

**Owen Joseph Mink** ☉ Medical Director, Captain, U. S. Navy, Washington, D. C.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1904; fellow of the American College of Surgeons and the American College of Physicians; entered the navy in 1904; assistant to the chief of the bureau of medicine and surgery of the navy department; aged 57; died, October 21, in Chevy Chase, Md., of coronary thrombosis.

**William Alfred Mann Sr.** ☉ Chicago; Chicago Medical College, 1883; assistant clinical professor of ophthalmology and otolaryngology at his alma mater, 1903 to 1906; past president of the Evanston branch of the Chicago Medical Society; oculist and aurist to the Michael Reese Hospital dispensary, 1890-1899, and the Provident Hospital, 1899-1910; aged 77; died, October 8, at his home in Wilmette, Ill., of carcinoma of the colon.

**David Yandell Roberts**, Louisville, Ky.; University of Louisville Medical Department, 1900; member of the Kentucky State Medical Association; surgeon to the SS. Mary and Elizabeth Hospital; district chief surgeon, Louisville and Nashville Railroad Company; district surgeon, Pullman and Western Union Telegraph companies; aged 57; died, October 12, of heart disease.

**Max Greenwald**, New York; Baltimore Medical College, 1907; member of the Medical Society of the State of New York; clinical instructor in medicine at the New York Medical College and Flower Hospital; served during the World War; on the staff of the Metropolitan and the Beth David hospitals; aged 49; died, October 2, of coronary thrombosis and arteriosclerosis.

**Norman James Pike**, Saginaw, Mich.; Michigan College of Medicine and Surgery, Detroit, 1891; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1898; member of the Michigan State Medical Society; served during the World War; aged 71; died suddenly, October 9, of duodenal ulcer, cerebral hemorrhage and heart disease.

**Samuel P. Glover** \* Altoona, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1884; veteran of the Spanish-American War; member of the American Academy of Ophthalmology and Oto-Laryngology; on the staff of the Altoona Hospital; aged 76; died suddenly, October 3, of coronary occlusion and diabetes mellitus.

**Eugene D. Regan**, Milwaukee; Milwaukee Medical College, 1898; member of the State Medical Society of Wisconsin; formerly assistant clinical professor of ophthalmology at the Marquette University School of Medicine; member of the State Medical Society of Wisconsin; aged 62; died suddenly, October 15, of coronary occlusion.

**Arthur H. Reading**, Lake Worth, Fla.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1886; at one time professor of physical diagnosis at his alma mater; formerly on the staffs of the Cook County and the Francis E. Willard hospitals, Chicago; aged 73; died, October 1, of endocarditis.

**Jesse Addison Sprowls** \* Donora, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1896; formerly member of the state legislature; at one time member of the board of health and board of education of Donora; for many years bank president; aged 65; died suddenly, October 10, of coronary occlusion.

**Charles Schott** \* Chicago; Rush Medical College, Chicago, 1909; member of the American Academy of Pediatrics; served during the World War; on the staffs of the Illinois Masonic Hospital, St. Joseph's Hospital and the Children's Memorial Hospital; aged 51; died, October 1, of heart disease.

**I. Herbert Tobias**, Hancock, Md.; Ohio Medical University, Columbus, 1903; member of the Medical and Surgical Faculty of Maryland; aged 62; formerly on the staff of the Washington County Hospital, Hagerstown, where he died, October 2, of angina pectoris and multiple sclerosis.

**Finis Coleman Little** \* East St. Louis, Ill.; St. Louis University School of Medicine, 1906; during the World War served on a draft board; formerly member of the board of fire and police commissioners; aged 64; died, October 13, in the Christian Welfare Hospital, of arteriosclerosis.

**George Ernest Poor**, Medfield, Mass.; College of Physicians and Surgeons, Boston, 1904; member of the American Psychiatric Association and the New England Society of Psychiatry; formerly on the staff of the Medfield State Hospital; aged 61; died, October 29, in Framingham.

**William Henry MacKay**, Washington, D. C.; Tufts College Medical School, Boston, 1914; served during the World War; for many years connected with the Veterans Administration Facility; aged 45; died, October 14, in Oteen, N. C., of pulmonary tuberculosis.

**Berry Hayden Smith**, Blythe, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1912; member of the Medical Association of Georgia; aged 54; died, September 27, in the University Hospital, Augusta, of injuries received in an automobile accident.

**David Simon Fleischhauer** \* Wabasha, Minn.; Cornell University Medical College, New York, 1899; past president of the Wabasha County Medical Society; formerly mayor of Wabasha; served during the World War; aged 59; died, October 14, of pneumonia.

**Harry Alexander Turk** \* East Liverpool, Ohio; Baltimore Medical College, 1907; served during the World War; formerly postmaster at Newell, W. Va.; aged 53; on the staff of the East Liverpool City Hospital, where he died, October 21, of cerebral hemorrhage.

**Hugh Martin Hall** \* New Carlisle, Ind.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1898; aged 64; died, October 18, in St. Bernard's Hospital, Chicago, of pneumonia, following an operation for hernia.

**Ernest E. Palmer** \* Kerrville, Texas (registered by Texas State Board of Medical Examiners, under the Act of 1907); past president of the Kerr County Medical Society; aged 80; died, October 14, in Sabinal, of injuries received in an automobile accident.

**James Rocquet Daboval** \* New Orleans; St. Louis University School of Medicine, 1925; professor of histology and pathology at Loyola University; aged 34; member of the staff of the Mercy Hospital, where he died, October 6, of cerebral hemorrhage.

**William G. Young**, Shepherd, Mich.; Saginaw (Mich.) Valley Medical College, 1903; member of the Michigan State Medical Society; aged 64; died, October 14, in the Carney-Wilcox Hospital, Alma, of injuries received in an automobile accident.

**Cyrenius James Newcomb** \* Bellefonte, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1896; formerly a druggist; at one time physician to the State Penitentiary; aged 70; died, October 13, in the Presbyterian Hospital, of ulcerative colitis.

**Robert Emmet Hickey**, Milwaukee; Milwaukee Medical College, 1910; superintendent of the division of contagious diseases of the city health department; aged 50; died, October 8, in St. Mary's Hospital, of hemorrhage due to duodenal ulcer.

**John Lincoln Robinson** \* Kansas City, Mo.; University Medical College of Kansas City, 1884; formerly professor of principles and practice of medicine at his alma mater; aged 75; died, October 12, in the Research Hospital, of pneumonia.

**James M. Miller**, Montrose, Mo.; Kansas City Medical College, 1886; Missouri Medical College, St. Louis, 1895; member of the Missouri State Medical Association; aged 72; died, October 6, in Kansas City, of coronary thrombosis.

**Charles Joseph Tierney** \* Cicero, Ill.; Chicago College of Medicine and Surgery, 1915; served during the World War; aged 48; on the staff of the Hospital of St. Anthony de Padua, Chicago, where he died, October 19, of coronary occlusion.

**Toll H. Sudduth**, Hanceville, Ala.; Birmingham Medical College, 1915; member of the Medical Association of the State of Alabama; served during the World War; aged 49; died, October 14, of injuries received in an automobile accident.

**Derk Anthony I. Thieme** \* Los Angeles; University of Southern California College of Medicine, Los Angeles, 1905; aged 54; on the staff of the Methodist Hospital, where he died, October 5, of carcinoma of the epiglottis.

**Daniel Albion Jones**, New Haven, Conn.; Yale University School of Medicine, New Haven, 1892; also a dentist; aged 75; died, October 19, in the Masonic Home, Wallingford, of tumor of the stomach and arteriosclerosis.

**Benjamin Startz**, New York; Cornell University Medical College, New York, 1906; member of the Medical Society of the State of New York; aged 52; died, October 3, in the Hospital for Joint Diseases, of carcinomatosis.

**James Thomas Pickerill**, Chicago; Northwestern University Medical School, Chicago, 1892; on the staff of the Swedish-Covenant Hospital; aged 71; died, October 14, of carcinoma of the submaxillary gland.

**Mary Wenzel** \* Philadelphia; Woman's Medical College of Pennsylvania, Philadelphia, 1897; for many years public school physician; aged 78; died, October 21, of hypostatic pneumonia and chronic myocarditis.

**George Whitman Bailey**, Fredericton, N. B., Canada; McGill University Faculty of Medicine, Montreal, Que., 1907; medical inspector of schools for the province of New Brunswick; aged 57; died, September 21.

**John Howard Neall** \* Quincy, Ill.; Howard University College of Medicine, Washington, D. C., 1886; aged 78; on the staff of Quincy Memorial Sanatorium, where he died, October 13, of coronary occlusion.

**Lewis Frank Ladd**, Martin, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1897; member of the Michigan State Medical Society; aged 68; died, October 3, of coronary occlusion.

**Edmond L. Hathcock**, Bearden, Ark.; Memphis (Tenn.) Hospital Medical College, 1900; member of the Arkansas Medical Society; aged 74; died, September 25, at a hospital in Camden, of sepsis and gangrene.

**Wiley Smith**, Van Horn, Texas; Barnes Medical College, St. Louis, 1905; member of the State Medical Association of Texas; for many years city and county health officer; aged 56; died recently, of heart disease.

**Theodor William Berthold** \* Chicago; Northwestern University Medical School, Chicago, 1922; on the staff of the Little Company of Mary Hospital, Evergreen Park, Ill.; aged 43; died suddenly, October 5.

**William Isham Hailey**, Hartwell, Ga.; Louisville (Ky.) Medical College, 1893; at one time mayor of Hartwell; for many years a member of the state board of health; aged 66; died, October 15, of uremia.

**James H. Fritts**, Ash Ridge, Ohio; Cincinnati College of Medicine and Surgery, 1888; aged 89; died, October 5, in the Good Samaritan Hospital, Cincinnati, of pneumonia, following an injury received in a fall.

**Hugh Beattie**, Elk Grove, Calif.; Cooper Medical College, San Francisco, 1896; member of the California Medical Association; county health officer; aged 70; died, September 18, of streptococcal endocarditis.

**Isaac Beatly Johnson**, Bayard, W. Va.; Baltimore University School of Medicine, 1903; member of the West Virginia State Medical Association; aged 65; died, October 16, of cardiac decompensation.

**Roy Louis Pendergraft**, Amarillo, Texas; University of Tennessee College of Medicine, Memphis, 1916; served during the World War; aged 48; died, October 1, in a local hospital, of acute appendicitis.

**Franklin K. Fickes**, Tyrone, Pa.; College of Physicians and Surgeons, Baltimore, 1881; for many years a member of the school board and the Tyrone borough council; aged 81; died, September 21.

**Thomas Eugene Moore**, San Antonio, Texas; University of Nashville Medical Department, 1899; member of the Associated Anesthetists of the United States and Canada; aged 61; died, September 20.

**Glenn Milton Hammon**, Los Angeles; Rush Medical College, Chicago, 1881; at one time instructor in the chest, throat and nose department at his alma mater; aged 79; died, October 10, of pneumonia.

**Augustus John Leitzbach** \* Fairmount, Ill.; Bellevue Hospital Medical College, New York, 1887; aged 74; died, September 26, in the Lake View Hospital, Danville, of carcinoma of the prostate.

**Barnett A. Elzas**, New York; Medical College of the State of South Carolina, Charleston, 1900; also a clergyman; aged 68; died, October 18, of sarcoma of the right lung and chronic myocarditis.

**James Lewis Gilbert**, Logansport, Ind.; Medical College of Ohio, Cincinnati, 1894; member of the Indiana State Medical Association; served during the World War; aged 65; died, October 13.

**Max Feldman**, Brooklyn; Baltimore Medical College, 1901; on the staff of the Manhattan Eye, Ear and Throat Hospital; aged 65; died, October 4, of arteriosclerosis and myocarditis.

**Edwin Augustus Clarke**, Winter Park, Fla.; Boston University School of Medicine, 1885; aged 73; died, October 3, in a sanatorium at Clifton Springs, of a cerebral hemorrhage.

**Charles A. V. Lutz**, Irvington, Calif.; University of Pennsylvania Department of Medicine, Philadelphia, 1877; aged 80; died, September 30, of lobar pneumonia and chronic nephritis.

**Wilbur Fisk McConkey** \* St. Louis; Rush Medical College, Chicago, 1892; member of the Associated Anesthetists of the United States and Canada; aged 71; died, September 20.

**William B. Weeks**, Maypearl, Texas; University of Louisville (Ky.) Medical Department, 1893; aged 71; died, September 20, in a hospital at Waxahachie, of heart disease.

**Frederick George Weygandt**, Brooklyn; Columbia University College of Physicians and Surgeons, New York, 1901; aged 57; died, October 15, of carcinoma of the larynx.

**Russell John Murdoch**, Blair, Neb.; Medical Department of Omaha University, 1898; formerly mayor of Blair; aged 66; died, September 23, of carcinoma of the stomach.

**William G. Rogers**, Honolulu, Hawaii; Pulte Medical College, Cincinnati, 1891; member of the Hawaii Territorial Medical Association; aged 72; died in September.

**Albert W. McLaughlin**, St. Joseph, Mich.; Medical College of Ohio, Cincinnati, 1880; aged 80; died, October 17, in St. Joseph Hospital, of chronic myocarditis.

**James H. Ashabranner**, New Albany, Ind., Eclectic Medical Institute, Cincinnati, 1899; aged 74; died, September 30, in St. Edward's Hospital, of coronary sclerosis.

**James Alexander Grant**, Banff, Alta, Canada; McGill University Faculty of Medicine, Montreal, Que., 1882; L.R.P., London, England, 1883; died, September 19.

**James Albert Zepp**, Baltimore; University of Maryland School of Medicine, Baltimore, 1887; aged 80; died, October 6, of arteriosclerosis and chronic nephritis.

**James Alexander West**, Winter Haven, Fla.; College of Physicians and Surgeons, Baltimore, 1893; aged 70; died, September 18, of carcinoma of the prostate.

**James Louis Early**, Owensboro, Ky.; Kentucky School of Medicine, Louisville, 1894; formerly member of the state senate; aged 69; died, September 11.

**Herman Charles Bodemer**, Denver; University of Nebraska College of Medicine, Omaha, 1923; aged 37; was found shot and killed, September 25.

**John De Mott Guthrie**, Seattle; University of Minnesota College of Medicine and Surgery, Minneapolis, 1897; aged 70; died, September 18, of endocarditis.

**Harold Ivan A. Cooke**, Chicago; Medical Department of the University of Alabama, Mobile, 1904; aged 61; died, September 30, of chronic myocarditis.

**William Jerome Enright**, Battle Creek, Mich.; Dearborn Medical College, Chicago, 1906; aged 62; died suddenly, October 17, of coronary thrombosis.

**William G. Krauss**, Cleveland; Cleveland Medical College, 1893; on the staff of the Grace Hospital; aged 65; died, October 15, of mitral stenosis.

**Richard C. Wells**, Baltimore; University of Maryland School of Medicine, Baltimore, 1867; aged 94; died, October 1, of senility and bronchitis.

**James J. Tatum**, Montrose, Miss.; Kentucky School of Medicine, Louisville, 1886; aged 76; died, September 17, of carcinoma of the mouth.

**Mary Belle Hancock**, Clearwater, Fla.; Kansas City Homeopathic Medical College, 1896; aged 75; died, October 2, of cerebral hemorrhage.

**Joseph Charles Lanzetta**, New York; Long Island College Hospital, Brooklyn, 1913; aged 45; died, October 23, in the Roosevelt Hospital.

**Arthur Eugene Ames**, Morrice, Mich.; Michigan College of Medicine and Surgery, Detroit, 1904; village president; aged 69; died, September 27.

**Edward Johnston Porteous**, Saratoga, Calif.; Jefferson Medical College of Philadelphia, 1904; aged 57; died, September 22, of tuberculosis.

**George Alex MacCallum**, Baltimore; Victoria University Medical Department, Coburg, Ont., Canada, 1866; aged 93; died, September 30.

**Philip Richard Burkland** \* Vermillion, S. D.; Northwestern University Medical School, Chicago, 1904; aged 61; died, September 30.

**Frank S. Love**, West Branch, Mich.; Hahnemann Medical College and Hospital, Chicago, 1890; aged 81; died, October 14, of myocarditis.

**Peter McGibbon**, Bracebridge, Ont., Canada; University of Toronto Faculty of Medicine, 1904; aged 54; died, October 10, of pneumonia.

**Milton Cecil Block**, Darlington, S. C.; Medical College of the State of South Carolina, Charleston, 1925; aged 33; died, October 4.

**Frederick J. Cawthorpe**, Tavistock, Ont., Canada; University of Toronto Faculty of Medicine, 1898; aged 63; died, September 27.

**Robert R. Hourigan**, St. Augustine, Fla.; University of Louisville (Ky.) Medical Department, 1889; aged 72; died, September 12.

**Ernest Andrew Timmons**, Columbia, Tenn.; Vanderbilt University School of Medicine, Nashville, 1900; aged 62; died, September 3.

**David M. Wheelis**, Columbus, Ga.; Southern Medical College, Atlanta, 1887; aged 74; died, October 9, of cerebral hemorrhage.

**Richard B. Cassady**, LaGrange, Ky.; Louisville Medical College, 1873; formerly county health officer; aged 92; died, October 10.

**Wallace W. Norris**, Atlanta, Ga.; University of the South Medical Department, Sewanee, Tenn., 1905; aged 65; died, October 19.

**Alfred Salls**, Oxford, N. C.; Homeopathic Hospital College, Cleveland, 1879; aged 87; died, September 19, of multiple neuritis.

**Alexander Clark Smith**, Steubenville, Ohio; Cleveland Homeopathic Medical College, 1898; aged 69; died in September.

**Thomas Edwin Taggart**, Los Angeles; College of Physicians and Surgeons of Chicago, 1886; aged 75; died, September 1.

**Elmore Sloan Pettyjohn**, Chicago; Rush Medical College, Chicago, 1882; aged 81; died, October 6, in Milford, Ohio.

**J. Bonner Mitchell**, Beaumont, Texas; Memphis (Tenn.) Hospital Medical College, 1902; aged 58; died, October 1.

**Duncan A. McPherson**, Toronto, Ont., Canada; Trinity Medical College, Toronto, 1892; died, September 21.

**Howard Crutcher**, Joliet, Ill.; Chicago Homeopathic Medical College, 1885; aged 70; died, September 11.

**W. F. Fuson**, Liberty, Tenn. (licensed in Tennessee in 1889); aged 76; died, September 19.

## Correspondence

### "THE RÔLE OF ALCOHOL IN CIRRHOSIS OF THE LIVER"

To the Editor:—I have read with interest the article in your October 10 issue entitled "The Rôle of Alcohol in Cirrhosis of the Liver," by Drs. Boles and Clark. I realize that the reader may misinterpret. I realize further that histories of alcoholism and of previous acute infectious diseases are fallible. Nevertheless it is permissible to compare groups giving such a history with those that do not and, within limitations, draw conclusions. The authors have drawn such conclusions, but I submit that, particularly with reference to a history of alcoholism, the authors have drawn conclusions contrary to their data. It is stated that 228 of 4,000 patients gave a history of alcoholism. I infer that 3,772 patients gave no such history. Of the 4,000 patients, 243 subsequently gave necropsy evidence of liver cirrhosis. Of these 243 cases, eighty-four were from among patients who gave a history of alcoholism and 159 were from among the patients who gave no such history. Similarly, of 151 cases exhibiting livers weighing 2,000 Gm. or more, seventy-five were from among patients who had given a history of alcoholism. From these data one may construct the following tables:

TABLE 1.—Persons Giving a History of Alcoholism

Autopsies	Cases of Cirrhosis		Liver Weighing 2,000 Gm. or More	
	No.	per Cent	No.	per Cent
228	84	37	75	33

TABLE 2.—Persons Not Giving a History of Alcoholism

Autopsies	Cases of Cirrhosis		Liver Weighing 2,000 Gm. or More	
	No.	per Cent	No.	per Cent
3,772	159	4.2	76	2.0*

\* Apparently this figure is very slightly low, as it is stated that persons having leukemia and similar conditions were not included. One might, however, assume that the 33 per cent would be likewise affected.

Thus it would appear that in the population discussed by the authors a patient who gave a history of alcoholism was nine times as likely to exhibit cirrhosis of the liver as a patient who failed to give such a history, and that the patient with an alcoholic history was sixteen times as likely to show a liver weighing 2,000 Gm. or more. Hence the data presented do show a strong and significant association between a history of alcoholism and a subsequent finding of liver cirrhosis or enlargement and the authors draw the opposite conclusion! I believe it unfortunate that so large a material should be permitted to convey an interpretation contrary to its apparent evaluation.

HOLLIS S. INGRAHAM, M.D., Albany, N. Y.

[NOTE.—The letter was referred to Dr. Boles, who replies:]

To the Editor:—As our paper stated, Dr. Clark and I reviewed 4,000 autopsies and based our conclusions purely on positive evidence. We did not accept a clinical diagnosis of cirrhosis unless it was confirmed by microscopic examination of sections of the liver. The clinical histories of such cases were examined and with few exceptions it was noted that in all the cases clinically diagnosed as cirrhosis a special effort had been made to elicit an accurate history concerning the use of alcohol. In many instances the original history contained no reference to alcohol but on subsequent interrogation a positive history was obtained. Only cases with definite histologic

evidence of cirrhosis and a definite history, positive or negative, for alcoholism were therefore used in calculating percentages and drawing our conclusions.

Dr. Ingraham assumes that, because only 228 patients admitted the use of alcohol, 3,772 did not use it, which is in accordance with our figures. With equal propriety, however, we might have assumed that the same individuals, less 159 who persistently denied the use of alcohol on repeated questioning, were alcoholic. As a matter of fact, a certain number of them must have been alcoholic, for it is inconceivable that there would be an incidence of only 5 per cent (228/4,000) of alcoholism in the population of a large general hospital accepting only charity patients from a stratum of society known for its alcoholic proclivities. In the negative group of 3,772 cases we admit the probability of inaccuracy in a history concerning alcoholism and because of this did not consider them in estimating percentages. It was apparent that no special effort to elicit such a history had been made, as was done in the cases of cirrhosis about which we were mainly concerned.

RUSSELL S. BOLES, M.D., Philadelphia.

### INSOLUBLE BISMUTH COMPOUNDS IN ANTISYPHILITIC TREATMENT

To the Editor:—The advisability of using insoluble bismuth compounds in antisyphilitic treatment is periodically brought up for discussion by medical societies, clinics and individual physicians. A general interest in this matter may justify a summary of my views, which have been given on occasion extemporaneously. My views are based on the results of experimental and clinical studies over a period of years of several bismuth compounds in our department and in the literature. The very extensive data of the literature, including most of ours, may be found in a recent compilation by Forst of Munich, probably the most complete and best, single, up-to-date summary of the pharmacologic and clinical actions of bismuth (*Handb. d. exper. Pharmacol.* 3:2249-2730 [part 4] 1935):

The use of insoluble bismuth compounds in antisyphilitic treatment has been considerably favored, although this usage represents a curious contradiction in pharmacologic principles. The inconsistency is impressive when this usage is compared with the practice of using only the soluble arsenicals. Why insolubility and unabsorbability should endow bismuth with desirable attributes in antisyphilitic treatment has been puzzling. Those who advocate insoluble bismuth do not advocate insoluble arsenicals; not even methods less spectacular than intravenous injection.

General experience now indicates that the same principles which apply to arsenicals also hold for bismuth, and, if high antisyphilitic efficiency is to be achieved, the soluble compounds of bismuth should be used, and not the insoluble. The facts as to poor body-availability of bismuth from insoluble compounds injected intramuscularly have been extensively ascertained by carefully controlled studies in both animals and man. For instance, the results with bismuth salicylate show that it is poorly, irregularly and incompletely absorbed. Only from 0.5 to not more than 10 per cent of the total bismuth injected is absorbed in two weeks, as compared with 50 per cent when soluble compounds are used. The remainder of this insoluble bismuth compound is encapsulated and remains localized in the muscles for weeks, months or years, a fact shown repeatedly by x-ray examinations. The plasma-bismuth after the bismuth salicylate amounts to only one-thirtieth to one-third that after the use of soluble compounds, despite a dosage from five to fifteen times greater. Other body fluids and tissues also contain less bismuth.

The intramuscular bismuth-depot is a continued source of danger for the patient. The capsule may break down as the result of various physiologic changes, such as the actions of

salts, water, exercise and fever. These agencies mobilize bismuth, increase its systemic action and frequently result in sudden bismuth poisoning. The mobilization of the metal is not self regulating so as to produce only the supposed advantages of a continued antisyphilitic action without any disadvantages. This is evident from the fact that the muscles contain a wholly uncontrolled depot of potential poison, which in the nature of things tends to be increased, if anything. These considerations point to the undesirability of bismuth salicylate as a choice compound in antisyphilitic treatment. Yet its use is advocated in many clinics and is followed parrot fashion by many practicing physicians. The comparative freedom from local irritation for the patient is presumably the main reason for using this insoluble compound; a slow and incomplete systemic action could hardly be an adequate reason. The circulating bismuth is obviously too small and irregular to do much good, and it cannot be materially increased by raising the dosage without increasing the hazard to the patient. Yet it is a demonstrated fact that antisyphilitic efficiency is directly proportional to the blood and tissue concentrations of bismuth. It seems clear that the use of insoluble bismuth compounds is not based on accepted scientific principles.

The practice of using insoluble bismuth compounds sheds a light on the skepticism of certain syphilologists, who discredit the value of bismuth in antisyphilitic treatment. This attitude has puzzled many investigators. Apparently, these skeptics have failed to test their impressions by a carefully considered use of soluble bismuth compounds, which are quantitatively absorbed, distributed and highly active. The greater therapeutic efficiency and usefulness of the soluble bismuth compounds is unquestioned, as is the case with the soluble arsenicals. Only when results are obtained under the most favorable conditions, in accordance with acceptable scientific criteria, will the full value of bismuth in antisyphilitic treatment be determined. Until then the position of the skeptics will remain untenable and unsound.

It is not amiss to point out in this connection that the French, who have been the most enthusiastic advocates of bismuth, have used almost invariably the soluble compounds, whereas the Germans and Americans, who have been less enthusiastic or more skeptical, have tended to use the insoluble. It is probable that there is more than a chance correlation between such clinical favoritism and skepticism and the physical and chemical properties and systemic actions of bismuth compounds, which determine the body availability and therefore the actions and usefulness of bismuth in the treatment of syphilis. For these various reasons the use of insoluble compounds of bismuth is, in my opinion, unwise and ill advised.

The uniformly high therapeutic rating accorded bismuth as an antisyphilitic remedy, when properly used, deserves more than skepticism engendered by use of compounds that cannot produce dependable and satisfactory results. Empiricism or arbitrariness in antisyphilitic therapy is not justified in place of the well planned and carefully controlled clinical experiment for confirmation or refutation of the generally much more satisfactorily obtained pharmacologic data. And if any field in medicine today is worthy of the most critical and rigid therapeutic experimentation, it is that of syphilis. Considerable progress in antisyphilitic therapy shall have been made when oral compounds are available that will enable a physician to maintain a patient on a long and intensive treatment without discouragement. Some preliminary skirmishes with bismuth in this direction indicate possibilities which further experimentation may settle favorably, something much to be desired for promoting the control and complete cure of syphilis.

P. J. HANZLIK, M.D., San Francisco.

Professor of Pharmacology, Stanford.  
University School of Medicine.

## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

### TREATMENT OF SYPHILIS

To the Editor:—A woman, aged 28, weighing 88 pounds (40 Kg. 5 feet 3 inches (160 cm.) in height, married, a secundipara, consulted me Oct. 20, 1935. Three weeks previously her husband had begun treatment for primary syphilis. There was a history of exposure, an examination showed mucous lesions of the vulva. Treatment was begun and carried out as shown in the accompanying table. Neoarsphenamine was discontinued November 29, following the second nitritoid crisis. In view of the fact that later she noted some distress when near her husband on days he received neoarsphenamine, no further use of the drug has been attempted. She shows no reaction to injections of silver arsphenamine but, because of a possibility of argyria, mapharsen was attempted, fair severe nausea and vomiting following the last two injections. What treatment is advisable in view of the fact that pregnancy has occurred during this course of treatment, dating from February 2, the last menstrual period. Please omit name and address.

M.D., North Carolina.

### Course of Treatment

10/20/35	.....	Wassermann reaction +4	
10/22/35	Neoarsphenamine, 0.6 Gm. bismuth 2		
10/26/35	Neoarsphenamine 0.6 Gm. bismuth 2		
10/31/35	Neoarsphenamine 0.6 Gm. bismuth 2		
11/ 7/35	Neoarsphenamine 0.6 Gm. bismuth 2		
11/14/35	Neoarsphenamine 0.6 Gm.	Wassermann reaction +2, Meinelke turbidity test +4	Nitritoid crisis
11/21/35	Neoarsphenamine 0.6 Gm.	.....	Nitritoid crisis
11/29/35	Neoarsphenamine 0.2 Gm. bismuth 2		
12/ 7/35	Bismuth 2		
12/14/35	Bismuth 2		
12/21/35	Bismuth 2		
12/28/35	Bismuth 2		
1/ 4/36	Silver arsphenamine 0.15 Gm.	Wassermann reaction negative	
1/11/36	Silver arsphenamine 0.15 Gm.		
1/18/36	Silver arsphenamine 0.3 Gm.		
1/25/36	Silver arsphenamine 0.3 Gm.		
2/ 1/36	Silver arsphenamine 0.3 Gm.		
2/ 8/36	Silver arsphenamine 0.15 Gm. bismuth 2		
2/15/36	Bismuth 2		
2/21/36	Bismuth 2		
2/28/36	Bismuth 2		
3/ 6/36	Bismuth 2		
3/13/36	Silver arsphenamine 0.15 Gm. bismuth 2	Wassermann reaction negative, Meinelke negative	Pregnant
3/20/36	Silver arsphenamine 0.3 Gm.		
3/28/36	Silver arsphenamine 0.16 Gm.		
4/ 3/36	Mapharsen 0.04 Gm.		
4/10/36	Mapharsen 0.04 Gm.	Nausea and vomiting	
4/17/36	Mapharsen 0.04 Gm.	Nausea and vomiting	

ANSWER.—In view of the fact that this patient with early syphilis of approximately eight months' duration is now pregnant, it is doubly urgent to attempt the continuation of treatment with some one of the arsphenamines. This is necessary not only for the adequate treatment of the patient's own infection but for the protection of the fetus. Since she shows no reaction to silver arsphenamine, treatment with this drug should be continued in alternation, as before, with the bismuth compound. Since the patient weighs only 88 pounds, a dose of 0.2 Gm. of silver arsphenamine may be considered adequate. There is no danger of argyria until approximately thirty such injections have been given, which, considering the patient's serologic progress, should be amply sufficient to complete her treatment. It is suggested that the courses of silver arsphenamine be of eight injections each, separated by courses of bismuth compound of from six to eight injections each, the treatment being timed if possible so that at least three to four injections of silver arsphenamine are given just prior to delivery. The patient's spinal fluid should be examined but, in view of her pregnancy, this may be postponed until immediately after delivery, when a routine lumbar puncture should be carried out while the patient is still in bed. The continuous plan

of treatment which has so far been used is correct and should be followed in the same manner, regardless of pregnancy.

The patient should be encouraged to tolerate minor treatment reactions in view of the importance of securing a healthy child.

### MYOCARDITIS

*To the Editor:*—A patient developed myocarditis following a cold. Her blood pressure remains low and her pulse rate rapid. She is obese, weighing 227 pounds (103 Kg.). She was kept in bed for six weeks, the weakness disappearing, but on getting up and doing her work she becomes very tired and has attacks of palpitation. She and her husband operate a greenhouse, and it is almost a necessity for her to work. She has been given a heart tablet of digitalis with hyoscyamus, and also strychnine. She has also lost weight moderately. For weakness she has also been given whisky two or three times a day in moderate doses. I have been reducing her weight by a diet, but with very poor results. Could you suggest a method of diet to help and also suggest how to strengthen the heart action and how to overcome her weakness? She has been taking liver and iron (Lextron) to combat slight secondary anemia. Do longitudinal ridges of the finger nails have any bearing on her condition? This condition with brittleness has developed only since her recent illness. Please omit name.

M.D., Ohio.

**ANSWER.**—A number of points need further study before an accurate appraisal of this case may be made. "Chronic myocarditis" following a cold usually means the aggravation of a preexisting cardiac degeneration. The presence of weakness, rapid heart rate and hypotension does not necessarily mean that the patient has myocarditis. It is assumed that there is no cardiac enlargement and that there are no signs of cardiac insufficiency such as edema, dyspnea and similar phenomena. The obesity, which yields so poorly to diet, would suggest a metabolic disorder. This suspicion is strengthened by the occurrence of the brittle finger nails with ridging. A hypothyroidism is often accompanied by these symptoms and in addition one often finds dry skin and hair, together with weakness. A thyroid disorder is frequently aggravated by the occurrence of an acute infection. A study of the metabolic rate in this patient would be of value.

Dietetic treatment to overcome the weakness and strengthen the heart does not offer much prospect of success. An under-nutrition diet to combat obesity is not likely to offer aid to a weakened heart. The remaining underlying factors must be worked out. Digitalis is not likely to be helpful unless cardiac decompensation exists. The iron content of the liver and iron mixtures is not great enough to do much real good in secondary anemia.

If this patient has undoubted cardiac degeneration or has suffered some acute coronary damage further rest must be insisted on in spite of the necessities of work, but from the facts given such a diagnosis seems open to argument. It must be remembered that in the presence of a constitutional or metabolic disorder a slow recovery is not unusual.

### CYSTITIS AND PREGNANCY

*To the Editor:*—A patient, now aged 29, had a two months pregnancy interrupted in 1932 because of an acute colon bacillus cystitis. There was no evidence of kidney infection, and the acute manifestations of the cystitis subsided rapidly; but some increased frequency, urgency, burning and tenesmus have persisted, gradually improving, so that for the last year she has had only mild and transient symptoms of this kind during some of the menstrual periods. At the present time the urine is normal and she is in good general health. Please give me an opinion, should pregnancy again take place, as to the likelihood of cystitis again occurring, and the possibility of the kidneys becoming involved, and suggest prophylactic measures against urinary infection. Please omit name.

M.D., Kentucky.

**ANSWER.**—In view of the fact that this patient has fully recovered from a cystitis which she had nearly four years ago, it seems unlikely that she would have a recurrence. As there has never been any evidence of a pyelitis, she would not be more likely to develop such an infection than any other pregnant woman. It also seems that in the absence of complications other than cystitis, the therapeutic abortion was hardly justifiable.

The urine should be examined bacteriologically to determine whether or not she is still harboring pathogenic organisms. If so, they should be eliminated by proper treatment before pregnancy occurs.

There is no specific therapy for such an infection of the urinary tract, but, in general, the bladder should be emptied promptly when the desire to micturate occurs, so that the wall does not become unduly stretched from retention. The position of the uterus should be checked and any malposition corrected. Elimination should be properly maintained from the gastro-

intestinal tract, and plenty of fluid should be imbibed so that the urinary tract is continually flushed. The resistance of the patient should be maintained by proper hygiene with adequate sleep, recreation and exercise. Frequent changes of posture would be desirable, making use of the knee-chest and the Sims' position, and possibly using the monkey-walk.

Colon bacillus cystitis is not usually recognized as an indication for therapeutic abortion, and pyelitis is a relatively frequent complication of pregnancy but is an infrequent indication for its termination. It would seem justifiable to allow this patient to become pregnant again, and the probability is that she would go to term without serious difficulty.

### INTRAPLEURAL PRESSURE DURING ARTIFICIAL PNEUMOTHORAX

*To the Editor:*—In *Queries and Minor Notes* in *THE JOURNAL*, April 4, you state that during forcible inspiration there is greater negativity of intrapleural pressure if the glottis is open rather than closed. I believe you are mistaken in that statement. Intrapleural pressure with expiration attempted, glottis closed, will read as high as 120 cm. of water; inspiration attempted, glottis closed, will read as low as —75 cm. of water. Almost all pathologic conditions of the lung and pleura make a quite noticeable difference in intrapleural pressures and not as you state "would not vary much from the normal, healthy pleural cavity." These changes are due to lung and pleura altered elasticity, atelectatic processes, adhesions, and so on.

H. W. GRANZEAU, M.D., Burlington, Wis.

**ANSWER.**—In the ordinary practical work of treatment by pneumothorax, the excessive respiratory gymnastics are not only not necessary but dangerous on the first induction of therapeutic pneumothorax and dangerous in the liability to traumatize the lung. On trying forcible inspiration with the glottis closed, with a specially constructed manometer to avoid aspiration, the negativity was found to be greater, as shown in this table of twelve patients who had a pneumothorax.

In the closing statement that pressure would not vary much from normal in the case of pathologic conditions, the answer stated the writer's experience of the manometric readings on the first entry into the pleural cavity of tuberculous patients who came for treatment. First readings, before injection of

#### *Results of Normal Inspiration, Forcible Inspiration, and Forcible Inspiration with the Glottis Closed*

	Normal Inspira- tion, Cc. Water	Forcible Inspira- tion, Cc. Water	Forcible Inspira- tion with Glottis Closed, Cc. Water
Case 1 .....	—5	—9.5	—13
Case 2 .....	—6	—12	—14
Case 3 .....	—3.75	—9.5	—11.25
Case 4 .....	—2	—5.25	—11
Case 5 .....	—3.25	—13.75	—10
Case 6 .....	—4.75	—7	—14
Case 7 .....	—6.5	—8.5	—15
Case 8 .....	—3	—7	—3.25
Case 9 .....	—2.75	—5.25	—20.25
Case 10 .....	—2.5	—6.75	—17.75
Case 11 .....	—4.5	—6	—13.25
Case 12 .....	—7.5	—18.5	—17

air, have fluctuations of negative pressure well within the normal limits stated. However, after injection of air, patients with pleural pathologic conditions, such as adhesions, fluid, blood or pus, will show a more definite change in the reading to the more positive side of pressure after the injection of only a few centimeters of air.

### TECHNIC OF ADMINISTERING DINITROPHENOL

*To the Editor:*—Please send me information on how to administer dinitrophenol according to the weight of patient.

A. L. DELANEY, M.D., Livingston, Texas.

**ANSWER.**—Because of variations in the susceptibility of patients to dinitrophenol, the drug has usually not been given on a weight basis but rather by the system of starting with a small, ineffective dose, which is gradually increased until the desired response is being obtained. By the latter system the initial dose is 0.1 Gm. (1½ grains) a day. This dose is increased by 0.1 Gm. every one to two weeks until symptoms supervene or a satisfactory rate of weight reduction is established. The usual daily dose finally required is from 0.3 to 0.4 Gm. In a patient weighing 70 Kg. this would correspond to from 4.3 to 5.7 mg. per kilogram (from ⅓ to ½ grain per pound). In case the dosage should be controlled on a weight basis, the initial daily dose could be 1 mg. per kilogram (⅓ grain per pound), increased gradually as required.

The importance of beginning with a small dose is worth reemphasizing, since the majority of the toxic or deleterious

side actions reported have been obtained in patients who were given full doses right from the start. The Council on Pharmacy and Chemistry has reviewed the available data on dinitrophenol and decided that it is not admissible to New and Non-official Remedies. This action was based on the large number of untoward results that followed the general clinical use of the drug. The sudden outburst of cataracts in women who had taken dinitrophenol is an additional reason why its use requires most careful consideration, the possible deleterious effects being weighed as against the possible benefits from such therapy. The cause of the cataracts is not yet established, and there is even evidence that the dinitrophenol cannot be responsible at all for them in some patients. But until this situation is more thoroughly clarified the proper thing to do would seem to be to refrain entirely from using this drug.

#### PARALYSIS OF SOFT PALATE AFTER TONSILLECTOMY

*To the Editor:*—In February 1934 I did a local tonsillectomy on a girl about 16 years of age, a simple, easy operation. She went home with instructions to remain in bed until I saw her the next day. When I saw her the next day she was lisping. She miscalled her words, which I naturally thought was caused from her throat muscles being sore and stiff following operation. This condition, however, remained after soreness had disappeared and has remained ever since. The following is a list of some of the main words that she miscalls with the way she pronounces them, as nearly as I can spell them:

The—zee	F—wes	Embarrass—rebraris
Study—swawee	Say—sway	Saturday—Swaverway
Looking—wookin	Good—dwood	That—zat
Walking—wawin	Sir—swer	Tri—twi
Language—wanwage	Because—twase	Tried—twied
T—twec		

She has very little scar tissue or contraction. It has proved baffling to every one who has examined her. If you have ever had a case similar to this reported and have a packet describing same I would like to see it.

J. D. THOMPSON, M.D., Port Arthur, Texas.

**ANSWER.**—Tonsillectomy, as far as can be determined, does not have lisping as one of its sequelae. If this patient is truly lisping, one would have to assume that the speech defect had been present prior to the operation or, if it came on afterward, that it was in the nature of some psychic rather than of a physical reaction to trauma. From the given list of mispronounced words, the impression is obtained, however, that the defect is rather that produced by a paresis or paralysis of the soft palate. In other words, it is the voice of rhinolalia aperta. Paresis or paralysis of the soft palate following tonsillectomy is not infrequent, but it usually disappears within a short time. Some stubborn instances have been noted to last for weeks and sometimes months, but it is rare to have it last as long as it has in this case. It would be advisable to observe the palate to see whether it moves properly on phonation; and the services of a speech defect specialist could well be employed.

#### LYMPHEDEMA

*To the Editor:*—A married woman, aged 31, has a swelling of her left limb, which began seven years ago, extends to halfway between the knee and the hip, is slowly getting larger, pits only slightly on pressure, and is painless except for a dull and slight ache. There is a feeling of weight in the limb, which is slightly colder than the other limb. At first it used to disappear over night but it does not any more (the morning size is about the same as in the evening). Sensation is normal. There is no discoloration. The patient has been a housekeeper for the last five years. At the beginning of her trouble she was a clerk in a store. The family history and Wassermann reaction are negative. Her physical examination reveals nothing. She has had no children. The swelling is about  $3\frac{1}{2}$  inches increase in circumference. Kindly omit name and address.

M.D., Iowa.

**ANSWER.**—Can definite trauma be excluded? Has a roentgenogram revealed normal bony structures? Is it a localized mass free from or adherent to the fascia or bone or is it a diffuse swelling of the limb up to the mid thigh? Are there any superficial veins, mottling or cyanosis? Are there any brawny patches or localized indurations? If all these questions can be answered by the negative, the diagnosis of unilateral noninflammatory lymphedema has to be considered, for which surgical excision of the muscle fascia and occasionally, if a definite lymph block can be found by suitable dyes at one point, drainage of lymph into the retroperitoneal spaces may be attempted. The lymphedema often spreads gradually into the other extremity and may end in a real bilateral elephantiasis. Such a condition must be regarded as serious and very difficult to manage.

#### ADIPOGENITAL DYSTROPHY

*To the Editor:*—A boy, aged 13, white, weighing about 116 pounds (52.6 Kg.), presents the typical fat distribution of the Fröhlich type, but while noticeable (and annoying to him) it is not present in great excess. The penis is infantile, the testes are about the size of a 2-year old's and there is a very thin growth of short, straight pubic hair. His parents are anxious to do whatever they can to help him to a normal development, and I believe they are willing to try glandular therapy even though I cannot, of course, promise results. I have seen the material published from time to time in THE JOURNAL but am still uncertain as to just what preparations and how much should be used. Could you outline a definite schedule for treatment? He is now, by the way, under treatment for oxyuriasis and mild hookworm infestation. He has been on this island for about a year; previous to that time the family lived in Maryland. There are two apparently normal brothers, aged 10 and 17 years.

M.D., Virgin Islands.

**ANSWER.**—The condition appears to be one of adiposogenital dystrophy (Fröhlich's syndrome), most often characterized by adiposity, delayed sex development, increased sugar tolerance, and occasionally mental hebetude.

Specific treatment with gland preparations has been recommended; but they are indicated only when the adiposity causes the patient marked difficulties. The fat and carbohydrate intake should be limited; the diet should consist for the most part of proteins, raw fruits, and vegetables. The amount of food consumed should not exceed the caloric requirements of the patient. The preparation that has most commonly been employed is a solution of anterior pituitary in doses of from 10 to 15 minims (0.6 to 0.9 cc.), given hypodermically; the size of the dose depending on the reaction and on the severity of the symptoms.

#### CHRONIC OSTEOMYELITIS

*To the Editor:*—In the case of a boy, aged 10 years, with a chronic (fifteen months' duration) low grade osteomyelitis of the ilium and an extension of a similarly low grade osteomyelitis of the neck of the femur, what form or forms of treatment would you suggest? The original infection, due to Staphylococcus aureus, was treated by autogenous and stock bacteriophage with considerable but not complete success. Would staphylococcus toxoid warrant a trial? Has there been any success reported from the use of huge doses of vitamin D in such cases? Any information you may send me about these or other forms of treatment will be much appreciated. Kindly use only initials if published.

M.D., New Jersey.

**ANSWER.**—Chronic osteomyelitis may be kept active by the presence of sequestrums, cavities or sclerosed bone in which low grade infection is extensively infiltrated. Staphylococcus toxoid has been reported to increase the resistance of the patient to a particular organism and in that way may prevent spread or extension of the disease. There is little evidence that it has any effect in sterilizing chronically infected bone. There is no evidence that large doses of vitamin D have any specific therapeutic effect in the treatment of chronic osteomyelitis.

Physicians throughout the country who have been most successful in the treatment of chronic osteomyelitis in any region of the body have found that adequate surgery was necessary in order to obtain healing. Diseased or devitalized bone should be removed and cavities obliterated. It is sometimes advisable to excise the major portion of the diseased ilium. Partial osteotomy of the neck of the femur is likewise frequently necessary in order to obtain healing. After adequate surgery, regardless of what type of dressing or medication is used, if the general health of the patient is promoted by a supportive program of rest and sunshine, fresh air, and high vitamin, high caloric diet, healing may be anticipated with a reasonable degree of certainty.

#### SCARLET FEVER IMMUNIZATION

*To the Editor:*—There has been considerable dispute in Gary as to the value of scarlet fever immunization. Will you kindly inform me as to the latest consensus with regard to the value of these immunizing injections?

JOSEPH GOLDSTONE, M.D., Gary, Ind.

**ANSWER.**—The answer rests to a considerable degree on one's interpretation of what constitutes scarlet fever. If a rash is essential for a diagnosis of scarlet fever, the Dick method for active immunization must be regarded as highly efficient.

Inoculations with Dick toxin do not prevent streptococcal infections. It is sometimes claimed that the scarlet fever toxin merely desensitizes an individual to the rash of scarlet fever but does not prevent the disease. Notwithstanding this criticism, inoculations with scarlet fever toxin have apparently greatly diminished the frequency of scarlet fever among employees in hospitals for contagious diseases.

Many physicians believe that the Dick method of active immunization against scarlet fever is of unquestioned value and yet hesitate to recommend the procedure because of the fear of severe reactions.

Inoculation with scarlet fever toxin is now a common procedure in hospitals for contagious diseases for the purpose of immunizing susceptible nurses and others who are brought in direct contact with scarlet fever patients. The method is also required for all nurses found to be susceptible according to the Dick test in many hospitals for noncontagious diseases. Since the adoption of such measures, there is no doubt that there have been far fewer reported cases of scarlet fever than were previously observed in the same hospitals prior to the use of the Dick toxin for the purpose of active immunization.

#### CEVITAMIC ACID AND COLITIS

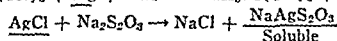
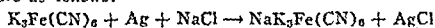
To the Editor:—A man recently took two tablets three times a day of cevitic acid (ascorbic acid), the synthetic vitamin C Roche preparation, for general tonic effect. After taking eight doses he developed a severe acute colitis, which cleared up after a few days of the usual treatment. There was not a history of indiscretion in diet prior to the attack. Could this preparation cause irritation of the colon? Please omit name.

M.D., Illinois.

ANSWER.—Vitamin C tablets have thus far not been reported to have such untoward manifestations as described. The colitis may have been incidental rather than a consequence.

#### REMOVAL OF PIGMENT FROM SKIN

To the Editor:—In Queries and Minor Notes in THE JOURNAL, October 10, page 1241, there is an answer to a query concerning the removal of pigment from the skin. In this it is stated that "the reducing fluid used for removal of silver from the skin is one composed of a solution of potassium ferricyanide and sodium thiosulfate in water." This is not a reducing fluid but an oxidizing one. The metallic silver is oxidized to silver ions, which then combines with chloride. The sodium thiosulfate probably merely serves to keep the silver chloride in solution long enough to be transported. The probable formulas to cover these reactions are as follows:



THEODORE CORNBLEET, M.D., Chicago.

## Council on Medical Education and Hospitals

### ABSTRACTS OF MINUTES OF BUSINESS MEETING OF COUNCIL ON MEDICAL EDUCATION AND HOSPITALS, CHICAGO, OCT. 11, 1936

1. The meeting was called to order at 10:30 a. m. Those present included Drs. Ray Lyman Wilbur (chairman), Charles E. Humiston, Frederic A. Washburn, John H. Musser, Fred Moore, Reginald Fitz, Fred W. Rankin, William D. Cutter (secretary), Herman G. Weiskotten, Carl M. Peterson and Mr. Homer F. Sanger.

2. It was resolved that the minutes of the business meeting of May 10, 1936, be approved.

3. It was resolved that West Virginia University School of Medicine and the University of Mississippi School of Medicine be placed on probation and that they be so listed in the Council's publications.

4. It was resolved that approval be withdrawn from the University of North Dakota School of Medicine without prejudice to the students now enrolled.

5. It was resolved that approval be withdrawn from the University of South Dakota School of Medicine without prejudice to the students now enrolled.

6. It was voted that the list of pathologists as submitted be approved.

7. It was voted to approve the lists of hospitals and other institutions recommended by the staff.

8. It was voted to approve the lists of schools for physical therapy and clinical laboratory technicians as submitted by the staff.

9. It was resolved that the American Board of Urology be approved.

WILLIAM D. CUTTER, M.D., Secretary.

## Medical Examinations and Licensure

### COMING EXAMINATIONS

#### STATE AND TERRITORIAL BOARDS

ALABAMA: Montgomery, June 29-July 1. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

ALASKA: Juneau, March 2. Sec., Dr. W. W. Council, Juneau.

ARIZONA: Phoenix, Jan. 5-6. Sec., Dr. J. H. Patterson, 826 Security Bldg., Phoenix.

CALIFORNIA: *Reciprocity*. Los Angeles, Dec. 16. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

COLORADO: Denver, Jan. 5. Sec., Dr. Harvey W. Snyder, 422 State Office Bldg., Denver.

CONNECTICUT: *Basic Science*. New Haven, Feb. 13. *Prerequisite to license examination*. Address State Board of Healing Arts, 1895 Yale Station, New Haven.

DELAWARE: Dover, July 13-15. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, Dover.

DISTRICT OF COLUMBIA: Washington, Jan. 11-12. Sec., Commission on Licensure, Dr. George C. Ruhland, 203 District Bldg., Washington.

IDaho: Boise, April 6. Commissioner of Law Enforcement, Hon. Emmitt Post, 205 State House, Boise.

ILLINOIS: Chicago, Jan. 26-28. Superintendent of Registration, Department of Registration and Education, Mr. Homer J. Byrd, Springfield.

IOWA: *Basic Science*. Des Moines, Jan. 12. Sec., Prof. Edward A. Benbrook, Iowa State College, Ames.

MICHIGAN: Ann Arbor and Detroit, June 9-11. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 202-3-4 Hollister Bldg., Lansing.

MINNESOTA: *Basic Science*. Minneapolis, Jan. 5-6. Sec., Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. *Medical*. Minneapolis, Jan. 19-21. Sec., Dr. Julian F. Du Bois, 350 St. Peter St., St. Paul.

MONTANA: Helena, April 6. Sec., Dr. S. A. Cooney, 7 W. 6th Ave., Helena.

NEW HAMPSHIRE: Concord, March 11-12. Sec., Board of Registration in Medicine, Dr. Charles Duncan, State House, Concord.

NEW MEXICO: Santa Fe, April 12-13. Sec., Dr. Le Grand Ward, Box 693, Santa Fe.

NEW YORK: Albany, Buffalo, New York and Syracuse, Jan. 25-28. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, 315 Education Bldg., Albany.

NORTH DAKOTA: Grand Forks, Jan. 5-8. Sec., Dr. G. M. Williamson, 4½ S. 3rd St., Grand Forks.

OREGON: Portland, Jan. 5-7. Sec., Dr. Joseph F. Wood, 509 Selling Bldg., Portland.

PENNSYLVANIA: Philadelphia, Jan. 5-9. Sec., Board of Medical Education and Licensure, Mr. James A. Newpher, Education Bldg., Harrisburg.

PUERTO RICO: San Juan, March 2. Sec., Dr. O. Costa Mandry, Box 536, San Juan.

RHODE ISLAND: Providence, Jan. 7-8. Chief, Division of Examiners, Mr. Robert D. Wholey, 366 State Office Bldg., Providence.

SOUTH DAKOTA: Pierre, Jan. 19-20. Dir., Division of Medical Licensure, Dr. B. A. Dyar, Pierre.

TENNESSEE: Memphis, Dec. 16-17. Sec., Dr. H. W. Qualls, 130 Madison Ave., Memphis.

VERMONT: Burlington, Feb. 10-12. Sec., Board of Medical Registration, Dr. W. Scott Nay, Underhill.

WASHINGTON: *Basic Science*. Seattle, Jan. 7-8. *Medical*. Seattle, Jan. 11-13. Dir., Department of Licenses, Mr. Harry C. Huse, Olympia.

WEST VIRGINIA: Charleston, March 1. Sec., Public Health Council, Dr. Arthur E. McClue, State Capitol, Charleston.

WISCONSIN: *Basic Science*. Milwaukee, Dec. 19. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee. *Medical*. Madison, Jan. 12-14. Sec., Dr. Henry J. Gramling, 2203 S. Layton Blvd., Milwaukee.

WYOMING: Cheyenne, Feb. 1. Sec., Dr. G. M. Anderson, Capitol Bldg., Cheyenne.

#### NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II*. Feb. 9-11, May 10-12, June 21-23, and Sept. 13-15. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

#### SPECIAL BOARDS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written examination for Group B applicants* will be held in various cities throughout the country, April 17. *Oral examinations for Group A and B applicants* will be given in Philadelphia, June 7-8. Sec., Dr. C. Guy Lane, 416 Marlborough St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written examination* will be held simultaneously in different centers of the United States and Canada on December 14 and in March. *Practical examination* will be given in St. Louis in April and at Philadelphia in June. Chairman, Dr. Walter L. Biering, 406 Sixth Ave., Rm. 1210, Des Moines.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written examination for Group B applicants* will be held in various cities throughout the United States and Canada, March 6. *Practical, oral and clinical examinations for Group A and B applicants* will be held at Atlantic City, N. J., June 7-8. *Applications must be received at least sixty days prior to the examination dates*. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).

AMERICAN BOARD OF OPHTHALMOLOGY: Los Angeles, Jan. 23. Sec., Dr. John Green, 3720 Washington Blvd., St. Louis, Mo.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Cleveland, Jan. 9. Sec., Dr. Fremont A. Chandler, 180 N. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Philadelphia, June 7-8. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: New York, Dec. 29-30. Sec., Dr. Walter Freeman, 1028 Connecticut Ave., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: Atlantic City, June 4-6. Sec., Dr. Byrl R. Kirklin, Mayo Clinic, Rochester.

## Missouri June Examination

Dr. E. T. McGaugh, state health commissioner, reports the written examination held in St. Louis, June 4-6, 1936. The examination covered 14 subjects. An average of 75 per cent was required to pass. One hundred and ninety-one candidates were examined, 190 of whom passed and one failed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Howard University College of Medicine.....	(1935)	81,	
81.6, 82.8, 84.4, 85			
Loyola University School of Medicine.....	(1936)	83.6	
Northwestern University Medical School.....	(1936)	85.6	
University of Illinois College of Medicine.....	(1936)	85.2, 86.3	
University of Kansas School of Medicine.....	(1930)	85.7,	
(1932) 83.8, (1935) 87.4			
University of Louisville School of Medicine.....	(1934)	84.3	
Harvard University Medical School.....	(1920) 85.3, (1935)	86.2	
St. Louis University School of Medicine.....	(1935)	78,	
86.5, (1936) 79.3, 80.2, 80.6, 80.7, 81, 81.1, 81.5,			
82, 82.1, 82.2, 82.3, 82.4, 82.5, 82.6, 82.6, 82.6,			
82.6, 82.7, 82.7, 82.9, 83, 83, 83.1, 83.1, 83.2, 83.5,			
83.5, 83.6, 83.6, 83.7, 83.7, 83.8, 83.8, 84, 84, 84.1,			
84.2, 84.2, 84.2, 84.5, 84.5, 84.5, 84.7, 84.8, 84.8, 84.9,			
85, 85.1, 85.2, 85.3, 85.3, 85.4, 85.5, 85.5, 85.6, 85.6,			
85.7, 85.8, 85.8, 85.9, 86.1, 86.1, 86.1, 86.2, 86.6,			
86.7, 86.8, 86.8, 86.8, 87, 87, 87.1, 87.3, 87.4, 87.5,			
87.6, 87.9, 88, 88.1, 88.1, 88.4, 88.6, 89, 89.2, 89.3,			
90.2			
Washington University School of Medicine. (1934) 88.7, (1935)		86.5,	
(1936) 78.9, 79.1, 80.3, 81, 81.5, 81.5, 81.6, 81.7,			
81.9, 82.2, 82.8, 83, 83, 83.1, 83.1, 83.3, 83.5,			
83.6, 83.6, 83.8, 83.8, 83.8, 84, 84, 84.1, 84.1,			
84.4, 84.4, 84.6, 84.6, 84.7, 84.8, 85, 85, 85.3, 85.5,			
85.5, 85.5, 85.7, 86, 86, 86, 86.1, 86.1, 86.1,			
86.1, 86.2, 86.5, 86.5, 86.6, 86.8, 86.9, 86.9, 87, 87.1,			
87.3, 87.6, 87.6, 87.6, 87.7, 87.8, 87.9, 88, 88, 88.1,			
88.3, 88.5, 88.5, 88.5, 88.7, 89.1, 89.7			
Creighton University School of Medicine.....	(1935)	83.5	
University of Nebraska College of Medicine.....	(1936)	85.4	
University of Pennsylvania School of Medicine.....	(1935)	86.1	
Meharry Medical College.....	(1935)	82.9	
University of Tennessee College of Medicine.....	(1934)	82.7	
University of Wisconsin Medical School.....	(1934) 87.6, (1935)	87	
University of Western Ontario Medical School.....	(1936)	86.3	
Magyar Királyi Ferencz József Tudományegyetem Kara,			
Szeged, Hungary.....	(1925)*	88.5	
Regia Università degli Studi di Pavia. Facoltà di Medi-			
cina e Chirurgia.....	(1935)*	80.9	
School	FAILED	Year Grad.	Per Cent
St. Louis College of Physicians and Surgeons.....	(1921)	44.5	

Twenty-two physicians were licensed by reciprocity and 5 physicians were licensed by endorsement from February 26 through July 29. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Georgia School of Medicine.....	(1933)	(1933)	Georgia
Rush Medical College.....	(1932) California, (1935) Kansas, Maryland	(1935)	Indiana
Indiana University School of Medicine.....	(1933), (1935)	(1935)	
University of Kansas School of Medicine.....	(1932), (1933, 3), (1934), (1935) Kansas	(1932),	
Louisiana State University Medical Center.....	(1935)	(1935)	Louisiana
University of Minnesota Medical School.....	(1934)	(1934)	Minnesota
University Medical College of Kansas City, Missouri.....	(1910)	(1910)	Kansas
Creighton University School of Medicine.....	(1929)	(1929)	Nebraska
University of Nebraska College of Medicine.....	(1933)	(1933)	Nebraska
Meharry Medical College.....	(1931), (1933)	(1933)	Tennessee
University of Tennessee College of Medicine.....	(1934)	(1934)	Tennessee
Baylor University College of Medicine.....	(1933)	(1933)	Texas
University of Texas School of Medicine.....	(1935)	(1935)	Texas
School	LICENSED BY ENDORSEMENT	Year Endorsement Grad.	of
Yale University School of Medicine.....	(1931), (1933) N. B. M. Ex.	(1931), (1933)	N. B. M. Ex.
Harvard University Medical School.....	(1933), (1934, 2) N. B. M. Ex.	(1933), (1934, 2)	N. B. M. Ex.

\* Verification of graduation in process.

## Iowa June Examination

Mr. H. W. Grefe, director, Division of Licensure and Registration, reports the written examination held by the Iowa State Board of Medical Examiners in Iowa City, June 2-4, 1936. The examination covered 8 subjects and included 100 questions. An average of 75 per cent was required to pass. Ninety-one candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
State University of Iowa College of Medicine.....	(1936)*	80.4,	
81.9, 81.9, 82.3, 82.4, 82.4, 83.5, 83.8, 83.8, 83.9,			
83.9, 84.3, 84.3, 84.5, 84.6, 84.8, 85.1, 85.3, 85.3,			
85.3, 85.3, 85.3, 85.3, 85.4, 85.5, 85.5, 85.6, 85.8,			
85.8, 85.9, 86, 86, 86.1, 86.3, 86.3, 86.4, 86.4, 86.5,			
86.8, 87, 87, 87.1, 87.3, 87.3, 87.3, 87.3, 87.4,			
87.4, 87.5, 87.5, 87.5, 87.6, 87.6, 87.9, 87.9, 88.1,			
88.1, 88.3, 88.4, 88.4, 88.6, 88.8, 88.8, 88.9,			
88.9, 89, 89.4, 89.4, 89.8, 89.9, 90, 90, 90, 90.1,			
90.1, 90.3, 90.4, 90.5, 90.6, 90.8, 90.8, 90.9, 91.3,			
91.5, 91.6			
Creighton University School of Medicine.....	(1935)	86.3	
Duke University School of Medicine.....	(1934)	82.6	
Universität Heidelberg Medizinische Fakultät.....	(1923)†	83.5	

Nine physicians were licensed by reciprocity and 1 physician was licensed by endorsement from August 12 through September 24. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Rush Medical College.....	(1933)	(1933)	Illinois
University of Illinois College of Medicine.....	(1934)	(1934)	Illinois
Keokuk Medical College, Iowa.....	(1898)	(1898)	Montana
Johns Hopkins University School of Medicine.....	(1910)	(1910)	Minnesota
University of Minnesota Medical School.....	(1911)	(1911)	Minnesota
Washington University School of ..			Missouri
Creighton University School of ..			Nebraska
University of Nebraska College c ..			Nebraska
School	LICENSED BY ENDORSEMENT	Year Endorsement Grad.	of
College of Medical Evangelists.....	(1930) N. B. M. Ex.	(1930)	N. B. M. Ex.

\* Licenses have not been issued.

† Verification of graduation in process. License has not been issued.

## Social Medicine and Medical Economics

## THE PERSUASIVE APPROACH WITH THE INFECTIOUS SYPHILIS CARRIER

## A Study in Public Health Method

LOUISE BROWN INGRAHAM  
PHILADELPHIA

The sterilization of the infectious syphilis carrier is a study of known and unknown. The problem is one that proceeds from the known syphilitic person to the identification, examination and treatment of the unknown. Compulsion and persuasion are two mediums of accomplishment. These may be applied separately or integrated. My purpose in this paper is the examination of the volitional or persuasive approach largely divorced from compulsion. Intrusion on the privacy of the patient and the use of his confidential disclosures are important considerations in applying this method. The voluntary approach implies freedom of initiative on the part of the follow-up personnel in developing a personalization of appeal. It involves experimentation in technics of persuasion. The confidence of the patient and his voluntary response are entirely dependent on the development and application of these skills.

In a syphilis clinic, in a teaching institution in a large city, one is presented with an amazing array of varied racial, psychic and sexual types. Actually no two cases present exactly the same problem nor can they be dealt with in strictly identical fashion. None the less, for the sake of discussion, an attempt at broad classification seems desirable.

Both colored and white people present, in clinical practice at least, three more or less consistent character types: the settled, the unstable and the migratory. With reference to sex conduct and mode of life, on the other hand, the two races vary considerably. Among the colored it has been found that patients fall largely into the following groups: openly promiscuous individuals, usually single; persons entering into temporary liaisons for economic or social advantage, and those common-law and legal marriages which often result in varying degrees of fidelity and permanence. The white people with whom I have dealt include the secretly promiscuous person, the stable family group and the irresponsible ne'er-do-well. I have purposely omitted the formal classification of "prostitute," since these observations have been guided by the patients' own estimate of their relation to society. Only one of the patients represented herself outright as a prostitute.

The colored patients seem to have accepted syphilis, or "bad blood," as an inevitable weakness of the flesh, mercifully free from stigma or disgrace. In fact, the idea that minor illnesses of all sorts are dependent on blood disease is becoming so increasingly prevalent among the clinic type of colored patient

From the Social Service Department, University Hospital, Lena R. Waters, director, and the Department of Dermatology and Syphilology, University of Pennsylvania School of Medicine, John H. Stokes, M.D., director. Aided by a grant from the Milbank Foundation.

that little restraint is needed in opening with them a discussion of their disease. But from the white people one learns the vacillation, suspicion and resentment that syphilis breeds.

The clinic from which this study was made is very accessible to a colored neighborhood of fairly stable individuals, employed in good times; it is convenient to a neighborhood of colored homes of the better type. A few patients come from the colored commercial districts and the neighborhoods of transience. Our white patients, included in this study, are drawn from all sections of the city and its suburbs, where the reputation of the hospital is known. One worker who covers this entire area from which so many classes of syphilitic patients are gathered cannot be said to become greatly familiar with the individual aspects of neighborhood infection. Still, it is possible for the clinic and the individual worker to gain a reputation in some accessible districts, as will be shown elsewhere in this paper.

Two hundred and one cases of early syphilis were used in this study. One hundred and forty-three patients were Negroes and fifty-eight were white persons. Because of the nature of this investigation, only one case was referred to the local board of health and this was done when persuasive methods had resulted in failure. In contact tracing, varying numbers of out-of-town sources are bound to occur, necessitating the occasional employment of out-of-town agencies. I have made no effort to evaluate the efficiency of the method and type of approach employed by other organizations.

#### IDENTIFYING CONTACTS

The voluntary approach as interpreted in this study is not a feeble touch and go process. Rather is it a tender but direct cultivation of the interest of the patient sometimes through friendliness, sometimes through sympathy, often by a generous performance of some personal service. There must be a quick intuitiveness to grasp opportunities, to sense resistance or change in attitude, with a readiness to advance, to retreat, to withdraw. The attention to the patient's interests cannot be transitory; a caring today, tomorrow forgetting. It must result in a constant watchful stimulation during the entire interval required for case finding. The subject must be kept alive or the patient will forget and cease to bother.

The preparation of the patient for the contact interview is an important and easily overlooked procedure. The physician's examination and frank discussion of the disease problem from a public health point of view should always precede the contact interview. The initial confidence which only the physician is able to inspire puts the patient in a receptive state of mind for the actual mechanics of tracing the transmission of his infection. He is already turning over in his mind the details of his exposures when he meets the social worker in her office.

It has always been the policy of this clinic to bring the patient and the social worker together with the least possible delay, preferably on the day the disease is diagnosed. Time was thought to be of great importance in learning the identities of exposures. An examination of success with patients forces us to a different conclusion. We were successful in getting identities of contacts with 41 per cent of the patients who were interviewed on the same day they registered. At times subsequent to their first visit to the clinic 62 per cent revealed contacts to their infection when interviewed (table 1).

Perhaps it is asking too much to expect the syphilis patient to be in any frame of mind to reveal much of his personal experiences on his first harrowing day in the clinic. His anxious fears have been confirmed by the physician's diagnosis; he has run the gantlet of admission routine and has been the victim of painful procedures. With the healing processes of time and arsphenamine, he will be in a more favorable state to discuss the sociological phases of his infection on a later visit to the clinic. First failures do not close the investigation but pave the way to further cultivation of confidence.

#### THE FIRST INTERVIEW

The initial interview is the foundation of all our hopes for success with the individual who has syphilis. It involves an interpretation to the patient which will enable him to accept syphilis as his present illness. It is the basis for his observance of infectious precautions. It is an attempt to forestall his lapse from treatment. It may uncover personal problems that limit his ability to undertake the treatment. It prepares and often completes the necessary arrangements for the examination of contacts. In fact, I suggest that the intelligent interpretation of syphilis may even mean the beginning of effective person to person propaganda for the control of this disease.

Dr. Gerald Pearson<sup>1</sup> says "The development of a positive type of relationship is as important for rapport between the syphilis patient and his physician as in the early stages of psychiatric treatment." The social worker, as the busy physician's assistant, interviews on a personal level and lays the ground work for a long time relationship with each patient.

It is only fair, and it is also an advantageous mode of approach, to give the patient to understand that he has valid and, in fact, excellent reasons for disclosing his personal experiences. The interpretation of the syphilitic patient's duty to the community should be logical and convincing. The prevalence of syphilis and its unsuspected presence in the community is therefore explained to each patient with understandable simplicity. A feeling of responsibility for warning others and preventing suffering can be developed in most patients. Before the names of exposures are asked for, the patient is convinced

TABLE 1.—*Value of the Delayed Interview Compared with the Value of an Interview of the Patient on the First Visit to the Clinic*

	Total Inter- views	Interviews Productive of Locatable Contacts, Number	Per Cent
Patient's first interview on date of admission.....	132	54	41
Patient's first interview subsequent to admission.....	66	41	62

of his good fortune in discovering his own illness while it can be controlled and has developed a sympathy for other victims of syphilis ignorant of their infection. The patient is assured of his freedom from guilt in unwittingly exposing others, and thus his infector similarly may be held blameless.

Effort should be constantly directed toward teaching the patient the manner in which he may seek out his own contacts and persuade them to report for medical examination. The technic just described and readily understood by the majority of patients suggests the use of a similar method in their own activities outside the hospital. If the patient's confidence is won, he willingly trusts the social worker to act through him in getting contacts examined. In the event that the patient remains unwilling or unable to approach his contacts himself, this task becomes the duty of the specialized clinic personnel.

Our 201 patients with infectious lesions of early syphilis were questioned immediately regarding their exposures. Exclusive of duplication, 114 (56.7 per cent) of those interviewed gave information usable in contact tracing. These 114 interviews resulted in the identification of 174 contacts, a rate of 1.5 contacts per productive interview (table 2). It will be seen from these figures what a large proportion of voluntary response can be expected from confidential interviewing.

In a city of a population of about 2,000,000, some 300,000 of which are colored, the complete identification of contacts with

1. Pearson, G. H. J.: Syphilis: Some Psychologic Aspects of Treatment, *Arch. Dermat. & Syph.* 23: 1021-1030 (June) 1931.

names and addresses might appear more difficult than in smaller communities. Smith and Brumfield,<sup>2</sup> however, in a study from the University of Virginia Clinic, obtained from 119 people the names of 196 contacts, exclusive of duplicates. A comparison of this with our results makes it seem evident that the type of community has little effect on the response of the individuals.

LOCATING CONTACTS

For the purpose of analysis I have separated the efforts in this study into the following categories: identifying, locating and persuading. The identification of contacts is done through the office conference. Locating them is the business of the patient and social worker outside the office. The persuading of the contacts to submit to examination follows their identification and location.

The question of who is to take the initiative in getting the contact in for examination is decided by agreement between the social worker and the patient after the name of the contact has been secured. Our major emphasis is always on the patient's direct appeal to his consort. The alternative in approaching the contact is through the social worker's visit, made with the approval and permission of our patient. Having counseled the patient as to attitude and approach, we suggest the mechanics of securing medical examination. The contact may seek private

syphilis therefore learns to temporize while finding out what kind of people his "prospects" are. They seldom respond to the clumsy truth, but they may yield to charm. Sincerity and sympathy for the feelings of the person must be genuine to carry conviction. A verbal generality regarding the contagiousness of infectious diseases is a good beginning for the interview. It can be suggested, for example, that an infectious epidemic has been discovered to be prevalent in the community. Certain persons are believed to have suffered exposure and are welcoming the opportunity to avoid illness. In the process of protecting the public, the hospital is confidentially advising individuals to undergo examination. Not "What is the disease?" but "Who told?" has been the first question put to the social worker. The fear of detection and threat of resentment are both embodied in this question. How it is answered may determine the course of the remainder of the interview. It can be observed here that the willingness of the original patient to have the social worker identify him as the informer usually implies his intentional indifference to the good will of his contact. If this is true, revealing the name of the informer may put the contact in the position of accused and reward the worker with a blanket denial. This has been observed in several instances when the person subsequently registered for examination and was inadvertently told that a certain named patient informed on him.

To conceal with diplomacy the name of the informer is therefore essential, and it lessens the possibility of mistaken identity. Yet when this information is withheld the contact is deprived of a degree of satisfaction, and his confidence in his interviewer's good intentions is shaken. His train of thought must therefore at once be directed along another line. To draw on his sympathy by suggesting the guilt and humiliation he would feel if he were held responsible for infecting some one is to stir his imagination and save the day. Reluctance to be identified implies the apologetic attitude of the unknown partner, while establishing the knowledge of a sense of responsibility on his part. It changes the emphasis from accusation to communication. The contact senses protection, and confidence matures. Many are quick to accept the validity of a request for examination without detailed explanation. Others open the way for an intimate discussion of their experience and exposures to infection.

A more aggressive technic possibly would give greater immediate reward but at the same time would almost certainly sacrifice valuable future gains.

REFERRING OF NONRESIDENT CONTACTS

Large numbers of people in any city are transient and migratory. Philadelphia is notably possessed of a colored population many of whom migrate from the South in search of employment; this failing, they return whence they came. It is a center for commerce with many smaller communities. Twenty per cent of our patients with early syphilis believed their infections to have been acquired out of town. Addresses and identification of their contacts were therefore referred with patient's permission to health officers elsewhere by correspondence. Fifty-three per cent of the identified out-of-town contacts were examined in their own communities as a result of these communications. Fourteen of the local contacts were reported to have left town before word could reach them.

AMOUNT OF EFFORT REQUIRED FOR ARRANGING CONTACT EXAMINATIONS

The expense in time and effort required for arranging examinations of contacts is important in the program of a syphilis clinic. The study described here was undertaken by one full-time medical social worker from the social service department of the University of Pennsylvania Hospital assisted by the physicians in the Syphilis Clinic. The interviews, visits, letters and telephone calls of the clinic social worker are the only

TABLE 2.—Results of Attempts to Identify and Trace the Contacts of 201 Early Infectious Cases of Syphilis Obtained Through Routine Clinic Examination

	Total Patients in Study	Productive Interviews	Individual Contacts Identified	Contacts Located	Contacts Located and Persuaded to Be Examined, Number	Per Cent
Colored....	143	91	134	103	96	93.2
White.....	58	23	40	36	32	88.8
Totals...	201	114	174	139	128	92.0

or clinical observation by making connections of his own choice, but always we wish to be certain that he has actually sought medical care. Hence the patient is asked to bring us the address of the examining physician. For a clinical examination we offer the services of our own staff and provide the patient with an admission ticket to be given his contact. Contacts who cannot be reached with ease are referred to health agencies in their own communities. Patients understand that we cannot be responsible for tactics other than our own. Of the 174 contacts identified, 139 were located by the patient, social worker and other agents.

PERSUADING

If the title of this paper is to be logically supported, the use of coercive measures must be excluded from consideration, for we are testing what voluntary communications and voluntary responses may be obtained by our own persuasive efforts from persons who have syphilis and from those they have exposed.

The ultimate finding of the whereabouts of the contact is the outcome of the usual methods of searching a neighborhood. Clues, however meager, are ever a challenge to imagination and resourcefulness. Lack of information regarding the individual and the possibility of error in identification offer much uncertainty at best. Face to face with the suspected person, it is not he but the social worker who is "on the spot." A little daring and a nice humility are needed for such an occasion.

It is probable that the contact visit is one of the most slanderous of all social approaches. The worker hunting infectious

2. Smith, D. C., and Brumfield, W. A., Jr.: Tracing the Transmission of Syphilis, J. A. M. A. 101:1955 (Dec. 16) 1933.

ones recorded here. The activities of physicians, health officers and other cooperative agencies cannot be tabulated for obvious reasons.

Of the 174 persons sought, 139, or practically 80 per cent, were located, and 128 (73.5 per cent) were eventually persuaded to submit to examination for syphilis (table 2). The contacts represented in our group are largely limited to the sexual partners of the infected persons. A few infants born under the expectation of infection are among the examined. There are no duplications.

It is impossible to measure the quantity of proffered information against the patient's actual knowledge concerning his sexual exposures and his willingness to divulge these secrets. Marital partners often protest their fidelity to each other. One of the

TABLE 3.—Efforts to Locate and Arrange Examination for 174 Persons Exposed to Syphilis

	Inter-views	Home Visits	Tele-phones	Total
Identifying.....	363	7	1	371
Locating and persuading.....	...	147	71	240
Totals.....	363	154	71	611

first symptoms of syphilis has been described by Wile as "loss of memory." Public health work in tracing contacts is often subject to personal resistance. Propaganda, education and persuasion, however, by stimulating public enthusiasm, will tend to minimize this personal resistance.

It is, however, impressive that 92 per cent of the candidates who were personally approached regarding an examination responded to the proposal, a figure which in itself points out the significant importance that persuasive methods may play in "case finding." Activities in the office, including interviews, telephone calls and letters, were sufficient to result in the examination of seventy-one contacts (55.4 per cent). These activities included the full use of the original patient in reaching his contact, the ultimate enlistment of the services of local and out of town agents, and the final confirmation of the contacts' voluntary examinations elsewhere. Fifty-seven contacts (44.6 per cent) required an eventual home visit for the successful arrangement of medical examination for syphilis.

The expense to the clinic of arranging contact examinations can be estimated on the basis of interviews, visits and letters. The extent to which the original patient can be made use of in securing contacts depends on the skill of the interviewer. Thus, a worker whose equipment includes such ability to use the patient will prove an economy in the undertaking. Interviews conducted by a trained social worker are estimated to cost a dollar an hour, the average salary of such a person being \$1,800 a year. Based on this figure, 363 interviews requiring approximately one-half hour each recorded in this study would amount to \$181. Successful follow-up visiting was estimated by Pugh, Stokes, Brown and Carnell<sup>3</sup> in 1930 to cost \$5.99 per patient.<sup>4</sup> Applying this to fifty-seven contacts, who, after a home visit by the social worker, were successfully persuaded to be examined, the sum of \$341.43 may be added. Ninety-seven additional visits may be estimated at \$1.40 per visit (salary, carfare, operation of automobile) on the basis of the same study. Telephone calls costing \$3.15, and letters \$7.81, complete a total of \$669.19.

It would appear, then, that an accomplishment of 128 contact examinations cost approximately \$5.22 each to arrange, the expense taking account only of recorded services.

#### THE PERSUASIVE APPROACH METHOD APPLIED

The contacts of the patients in this study largely chose the same hospital for their medical examinations (table 4). The outcome of the study and our growing experience leads us to think that a favorable reputation credited to the hospital of their choice or its representative and proclaimed by patients among their neighbors and friends greatly promotes the success of contact activities. Confidence and good will ensuing on a number of years' acquaintance in one neighborhood resulted in easy identification of contacts and immediate medical care for the infected. The importance of this friendly persuasive approach is well illustrated in the following instance, wherein many contacts were made through communications and assistance of neighbors who were our patients:

When Ellen B. was diagnosed as having secondary syphilis, darkfield positive, in the University Hospital she named her girl friend and another youth as possible sources of infection. Ellen was a frail, unattractive, 13 year old colored girl, referred to clinic by the Board of Compulsory Education after exclusion from public school because of a positive serologic reaction and suspicious pregnancy. She lived with her alleged brutal father and her truant, delinquent girl friend in a street notorious for immoral and insanitary living conditions. She indicated that the girl friend had been "sleeping" with her (the patient's) father. The clinic had treated for syphilis and supervised the attendance of seven inhabitants of this tiny street prior to the discovery of the child's seduction. Local conditions had been known and deplored, but no action had been taken.

Of the nineteen colored households in this impoverished street, thirteen families, all on public relief, lived wretchedly in the tumble-down houses facing the railroad tracks. Neighborhood gangsters had converted an empty dwelling into a club, where gambling and drinking prevailed by night and day. Several of the insanitary homes had been reported to the housing commission; the conditions had been confirmed through their investigations, and some corrected.

Ellen's girl friend had been previously hospitalized forcibly and her diagnosis of infectious syphilis was readily confirmed by another hospital. The girl had disappeared; her whereabouts were unknown. The father had registered in the same hospital, but syphilis was unproved. Ellen's sister and her sister's paramour, advised immediately by the social worker to report for study, were both diagnosed as having early syphilis, darkfield positive. The sister's paramour named the original delinquent girl friend as his source of infection.

TABLE 4.—Examinations of Contacts

	Number	Per Cent
Contacts examined at the University of Pennsylvania clinic.....	91	71
Contacts examined elsewhere		
In town.....	21	
Out of town.....	16	28.9
Total.....	128	

The suspicion of pregnancy in Ellen was found justified on subsequent complete examination, and efforts were made to arrange medical examination of her seducer, Charles C. Even though stimulated by the medical social worker, the influence of Charles's elderly syphilitic father, a University Hospital patient, was unavailing in bringing about the examination. Further information contributed by relatives led to the discovery that the University Hospital had diagnosed Charles's case "early syphilis" two years before. Charles's common law wife and child, also L. Avenue residents, had been studied for syphilis in the University Hospital, the mother's active syphilis treated, the child's syphilis unproved.

Adjacent to Ellen's home lived Marion L. C. Her illegitimate, syphilitic child shortly after birth entered the University Hospital with poliomyelitis and was already under social service supervision. The syphilitic mother had once confided that, although the C. boy was no blood relative, he was her child's father and infector. In court the mother had refused to identify

3. Pugh, J. H.; Stokes, J. H.; Brown, Louise A., and Carnell, Dorothy: A Study Based on Personal Follow-Up Results in a Syphilis Clinic, of the Patient's Reasons for Lapse in Treatment, *Am. J. Syph.* 14: 438 (Oct.) 1930.

4. It is assuming that follow-up visits and contact visits require approximately the same amount of effort.

C. as her paramour, though neighborhood suspicion pointed to this youth, protected by his loyal mistress.

Mrs. Clara R., her son's paramour and son's illegitimate child residing a few doors down the street were also under social service supervision. The two women were syphilis patients in our clinic; examination of the child was negative. Three cases of active tuberculosis existed in this street.

Until the rise of the acute situation described, this neighborhood had been tolerated as chronic and inevitable. Preoccupation with case finding and clinic attendance sometimes absorbs the largest share of the worker's thought and energy when many cases of infectious disease are to be handled. Some consideration of the social conditions that contribute to illness and delinquency, however, ought to be a part of the philosophy of the contact follow-up worker when interpreting the responsibilities of public health. Potential situations should be recognized, and the community agencies skilled in handling these should be freely called on to render service.

The Bureau of Compulsory Education, the Visiting Nurse Society, the County Relief Board, the City Hospital, the Juvenile Court and the city health department were therefore presently all actively interested in this flagrant case. Equipped with such evidence of unwholesome influences, neighborhood infection and insanitary living conditions, the Social Service Department of the University Hospital presented the situation to the city department of health. Within five weeks the dwellings were razed and the street was closed, putting an end to a local focus and regional menace.

In this nest of infections there were eleven patients with active syphilis. All but one were patients of the University of Pennsylvania Syphilis Clinic. Four cases were highly infectious. Five other persons who were contacts were examined but syphilis was unproved.

Medical social supervision was continued on the infected families. In spite of an active heart lesion, undernourishment and syphilis, 13 year old Ellen was brought successfully to term and delivered of a healthy, living infant.

This case report illustrates the high incidence of unsuspected syphilis in a small population group or area, yet it was not the syphilis of a red light district. It was the syphilis of a low class community unit living under bad housing conditions and poverty. The women were not prostitutes but the unwilling victims of idleness, vagrancy and ignorance. Since the geography of the neighborhood completely concealed it from the passing public, it was denied even the controlling influence of public opinion in the simplest requirements for common decency. As a result, seduction and promiscuity, illegitimacy and infection continued without abatement or interference.

If the infection in this community had remained within its boundaries, the final action might be questioned. The destruction of these homes would mean the scattering of multiple foci of infection among the population. In actuality Ellen's girl friend had already fled; the sister's paramour had entrained for a CCC camp; Ellen had been withdrawn for protection; new faces had appeared within the group. Syphilis came and went as separated families united or individuals departed to seek benefits elsewhere.

#### COMMENT

The method used in the voluntary approach to the infectious syphilis carrier is commended by the evidence of its success. The approach may seem objectionably emotional and personal, perhaps impractical, as a teachable technic. But vested with no authority, unsupplemented by aid from local health authorities, the persuasive method as practiced in this clinic made its successful appeal directly to the character of the individual. The method drew forth neither criticism nor resentment from patients and contacts. Only one patient in the entire study group showed negative feelings. His were directed against the diagnosis and were thought to involve a dimming of pride and loss of reverence for his social code.

As it gained in reputation, the voluntary approach inspired confidence. Among the 201 patients forming the material of

the study, only three were registered under assumed names. Of the seven whose original intention was to falsify, four made amends and subsequently offered proofs of identity in pledge of loyalty prior to their discharge from active treatment. One was the self-styled prostitute. The surprising fact that the persuasive-confidential approach would discourage the desire for anonymity could not have been predicted, but if further study actually proves this to be the case, it is another strong argument in favor of this method.

Persuasion as a public health practice may be defined, then, as an offer of aid so convincingly extended and so helpfully applied as to earn willing acceptance.

The technic of initial and subsequent interviews described in some detail in the text is equally applicable in public health undertakings, in the physician's private office, in the home, in the hospital clinic and in the social service office.

The approach dips deep into the heart of the individual and society, slowly brings into the community a realization of the ominous prevalence of syphilis and makes possible a more intensive medical attack through fostering a better understanding between the patient and the physician. It appeals to the ideals of the individual, maintains his self respect and upholds his position in society.

A small organization for the treatment of syphilis can, through the use of the voluntary approach, obtain a following of faithful patients who will support its chosen public health activities and assist in the spreading of intelligent syphilis propaganda.

#### SUMMARY

The persuasive approach is the method used in contact tracing of syphilis at the clinic of the University of Pennsylvania Hospital. Its aims with the syphilis patient are to gain his voluntary disclosures of identities of recent sexual intimates, to gain his voluntary services in personally recruiting them for medical examination, and to gain his voluntary agreement to our performance of this service. On the part of the "contact" the objective is that he voluntarily seek medical examination for syphilis. A trial of this noncompulsive method was rewarded with confidential disclosures from infected patients as to names and whereabouts of contacts and these were induced to be examined for syphilis as follows:

1. Of 201 patients with syphilis, 114 identified 174 exposures, an identification rate of 1.5 per cent contacts per productive case.

2. One hundred and thirty-seven (80 per cent) of the 174 persons sought were located; 128 (73.5 per cent) were recruited for examinations. Since 128 of the 139 contacts located were persuaded to report for study, persuasion was 92 per cent effective when the individual contact could be personally reached.

- 3 The type of community has little effect on the response of individuals, as evidenced by a comparison of these figures with those obtained by other writers elsewhere.

4. In addition to office interviews with patients to obtain information, home visits were required to complete arrangements for the examination of fifty-seven contacts (44.6 per cent).

5. The communications of the clinic social worker instrumental in the accomplishment of the 128 examinations for syphilis cost \$5.22 per successful case.

6. Nearly three fourths of the people who agreed to be examined reported to the clinic where the original case was discovered.

7. Of the identified out of town contacts, 53 per cent were eventually examined through the cooperation of outside agencies.

8. A brief delay in conferring with infected patients regarding exposures did not diminish but rather increased the successful identification of contacts. Sixty-two per cent of patients revealed usable information at times subsequent to their first visit to the clinic.

9. Protecting the informant's name from disclosure was advantageous in building confidence when proposing examination for syphilis.

10. Confidence and good will, the outgrowth of several years of professional acquaintance in one neighborhood, greatly augmented the identification of contacts and the speedy accomplishment of medical care of infected individuals.

11. A neighborhood study, included in detail, shows that the sexually promiscuous woman is often not a voluntary prostitute but is frequently the prey of unhappy social conditions.

## Book Notices

**A Text-Book of Physiology for Medical Students and Physicians.** By William H. Howell, Ph.D., M.D., Sc.D. Thirteenth edition. Cloth. Price, \$7. Pp. 1,150, with 308 illustrations. Philadelphia & London: W. B. Saunders Company, 1936.

This standard work continues to be a mine of valuable information. The current edition represents a more thorough revision than has been made for some time, part of which is based on work appearing in the literature within three or four months of the date of publication. The factual material is well selected and the clear, lucid style of earlier editions is retained. Nevertheless, one is impressed with the absence of the point of view of modern physiology, particularly in the section on the nervous system. Many of the anatomic and histologic illustrations that have been carried down from earlier editions are no longer pertinent and add nothing to the value of the book. Likewise, it is doubtful whether an illustration of a spectroscopic (fig. 182) is of any value, or the large cut of the venous pressure apparatus (fig. 206). While the point is of minor importance, the adoption of a more complete, uniform and rational system of bibliographic reference would be of great convenience to the average reader. In many instances important facts are referred to an author without any reference being given to the original publication. For instance, on page 935 there is a footnote citation to the work of Park and McClure. In the text this reference is closely followed by the name of Tongu, for which there is no citation. The critical reader is conscious of a certain degree of incompleteness in most of the author's attempts to discuss chemical reactions. Whole pages are given over to structural formulas with little attempt to point out their significance. A chemist will need no explanation; but when one recalls that, according to the title, the book is written for medical students and physicians, it appears doubtful whether these inclusions will be of any assistance to the majority of readers. Likewise there appears to be little justification for the inclusion of such structural formulas as the one proposed for progesterone (p. 959) without pointing out the significance of the configuration in relation to other compounds, especially in view of the fact that this is not a proved formula. Despite these criticisms, it continues to rank high among textbooks in the English language and should be a valuable addition to the physician's library.

**On the Disturbance of the Circulation in Spinal Anaesthesia: An Experimental Study.** By Oscar O. Schuberth. Acta Chirurgica Scandinavica, Vol. LXXXVIII. Supplementum XLIII. Paper. Pp. 77, with 9 illustrations. Stockholm: Kungl. Boktryckeriet. P. A. Norstedt & Söner, 1936.

Spinal anesthesia simulates shock, and for that reason the author is uncertain as to whether or not it should be used. He carried out experimental clinical investigations and thoroughly reviewed the literature. Many definitions of shock are presented and one definition was decided on for this investigation. The influence of spinal anesthesia on certain circulatory factors, namely, (1) the oxygen consumption, (2) the arterial-venous oxygen difference, (3) the cardiac output per minute and per beat, (4) the venous pressure, (5) the circulating blood volume and (6) the capillary picture, are considered, together with the influence on respiration of spinal anesthesia involving the thoracic but not the cervical part of the spinal cord. The animals, in most instances, were narcotized with urethane and picroton. The spinal anesthetic agent was procaine to which a dye had been added. Not all the factors concerned in the

experiments have been explained. Debatable points are made: for example, the author states "The fact that the doses of novocain used after being absorbed into the blood do not affect the circulation is apparent from table 1, rabbit 105, which immediately after the first determination was given a subcutaneous injection of 0.6 cc. of 10 per cent solution of novocain and in the second determination carried out twenty-five minutes later presented almost unchanged values."

The clinical data were not as satisfactory to the author as were his experimental data. Some of the patients to whom a spinal anesthetic was administered received spinocaine (Pitkin's method), some received procaine dissolved in liquor (Barker's method), and some received a diluted solution of percaïne (Jones's method). To each patient 50 mg. of ephedrine was administered subcutaneously prior to induction of anesthesia. The author's data, however, are presented in tables and his conclusions are drawn rather cautiously. His methods of experimentation are described carefully. The best summary of the work probably is that of the author, which is as follows:

1. In this work shock means a peripheral circulatory insufficiency.
2. In experiments on rabbits, spinal anesthesia caused the following changes: (a) a moderate decrease in the oxygen consumption, (b) a slight decrease in the oxygen content of the arterial blood, (c) a considerable decrease in the oxygen content of the venous blood, (d) a considerable increase in the arterial-venous oxygen difference, (e) a considerable decrease in the cardiac output per minute.
3. The determinations in man disclosed that: (a) the oxygen consumption showed no definite changes in spinal anesthesia, though a slight decrease is probable, (b) the arterial-venous difference was subjected to an increase under the influence of spinal anesthesia, (c) the cardiac output suffered a decrease in four cases combined with a heavy fall in the blood pressure.
4. Experiments on rabbits showed that the pressure in the right auricle was subjected to no change or to a slight decrease in the cases of spinal anesthesia that were not combined with respiratory failure.
5. There is therefore reason to consider the circulatory disturbance in spinal anesthesia as shock.
6. The circulating blood volume (plasma volume + red cell volume) suffers no change in connection with spinal anesthesia in the rabbit and the cat. (The plasma volume was determined with the dye method; the red cell volume with the carbon monoxide method.)
7. The absence of a decrease in the blood volume in a fundamental manner characterizes the shock in spinal anesthesia from most other kinds of shock.
8. In experiments with rabbits the red cell hematocrit value was subjected to a decrease under the influence of spinal anesthesia. This decrease is conceived to depend upon a displacement of the corpuscular elements of the blood towards the capillaries.
9. With Sjöstrand's method for the study of the capillary content of blood corpuscles there could be found, during spinal anesthesia in the rabbit, no sure increase in the capillary content of the blood corpuscles.
10. Recording of the tidal air in spinal anesthesia in the rabbit, encompassing the greater part of the thoracic cord, discloses that it is subjected to no change owing to the paresis of the intercostal muscles. There is no support for the opinion that the fall in the blood pressure is secondary to this paresis.
11. Nor does the tidal air in spinal anesthesia in man suffer any change that can explain the considerable fall in the blood pressure that may occur.
12. Experiments on rabbits show that the respiration, even in spinal anesthesia covering the whole thoracic cord, is sufficient for the saturation of the blood passing through the lungs. The decrease in the oxygen content of the arterial blood that has been established is explained by the simultaneously falling hematocrit values.

This monograph represents a great deal of work. Since little work has been done on this particular subject, the author's problem became so great in scope that in the time that could be devoted to it he no doubt was unable to check all the criticisms that might be raised concerning the evaluation of his results. Nevertheless, it is a good contribution to the further understanding and use of spinal anesthesia and will be of interest to physiologists, pharmacologists and clinicians, and especially to those who have an interest in the questions of shock and spinal anesthesia. The text is in English.

**Contraception as a Therapeutic Measure.** By Bessie L. Mosey, M.D. Cloth. Price, \$1. Pp. 106. Baltimore: Williams & Wilkins Company, 1936.

This is a complete statistical report of the Bureau for Contraceptive Advice in Baltimore, which operated for a period of five years, encompassing more than 1,000 cases. The bureau was sponsored by the late J. Whitridge Williams. There were 1,152 white (81.1 per cent) and Negro (18.9 per cent) patients referred by physicians for medical indications, and 1,069 were given contraceptive advice. Over 60 per cent were rated of low and less than 4 per cent of high intelligence. About 88 per cent of white and 20 per cent of Negro women had used some

sort of contraception before applying to the bureau, and only 15.11 per cent had any success. More than 1,000 abortions were admitted by the group before registering, of which 37 per cent were criminally or self induced. The method of contraception adopted by the clinic was the combined use of a vaginal occlusive diaphragm and spermicidal jelly in 95 per cent of treated cases. About 45 per cent of treated patients attended the clinic and used the method successfully for periods of from six months to six years. Only 2.71 per cent of the total number of treated cases were actual failures. Physical and mental improvement was observed in women using contraception, owing to respite from childbearing and relief from the fear of pregnancy. No injurious results were noted; in fact, many cases of improved condition of the cervix were noted after one year. Sterility was apparently not caused by the use of the contraceptives employed, as evidenced by many pregnancies that occurred when the method was omitted or discarded. Because of the low mentality of a large group of women, the method is successful only in part of the entire group of dispensary patients. The report is a valuable addition to the literature on medical contraception and will prove to be of interest to practicing physicians and social workers in this field. An adequate index and bibliography are appended.

**Die Malaria: Eine Einführung in ihre Klinik, Parasitologie und Bekämpfung.** Von Professor Bernhard Nocht, Dr. Med., Dr. Med. H. C., und Professor Martin Mayer, Dr. Med., Dr. Med. Vet. H. C. Second edition. Paper. Price, 15.60 marks. Pp. 172, with 26 illustrations. Berlin: Julius Springer, 1936.

The first edition of this book on malaria was designed originally as a series of lectures for military physicians in the World War. In the present edition the authors have continued to restrict the subject matter to facts of interest to the practicing physician. The first sections are the most extensive and are devoted to such clinical subjects as clinical manifestations and treatment in both malaria and blackwater fever. As would be expected, treatment is considered in detail and the newer antimalarial drugs are discussed. The more strictly clinical sections are followed by a general review of the entire subject of malaria. There are short summaries on such subjects as biochemical research methods for the study of malaria, pathologic anatomy, immunity, epidemiology, serology and hematology. The latter portion of the general review deals with various zoological descriptions of the malarial parasites and mosquito carriers together with a short consideration of methods of malaria control by mosquito reduction. Throughout, the material is accurate and well selected. No attempt is made to make an encyclopedia for the specialist, but it is an excellent brief summary of the whole field of malariology for the physician or sanitarian who is not a specialist in the field but wishes a general survey.

**Neuroembryology: An Experimental Study.** By Samuel R. Detwiler, Professor of Anatomy, College of Physicians and Surgeons, Columbia University. Cloth. Price, \$3.75. Pp. 218, with 107 illustrations. New York: Macmillan Company, 1936.

Speculation regarding the formative agencies that determine the growth and adult form of the body has been replaced by experimental evidence accumulated during the past fifty years by Roux, Born, Spemann, Harrison and their successors. The agencies that control the processes of growth and differentiation include mechanical, chemical and electrical factors, and the problem is to isolate these and determine the part played by each in the dynamic vital process. This volume reports the facts so far established and the conclusions to which they point. Most of the experiments here summarized were made on amphibians from egg to adult stages by the methods of experimental surgery, with which the author himself has worked so fruitfully. There is a brief history of the neuron concept and the experimental evidence in its support, with an analysis of the parts played by neuroblasts and sheath cells in the development of peripheral nerves, including studies in tissue culture and ingenious grafting of living parts. The direction taken by growing nerve fibers may be determined by chemical, electrical or mechanical agencies. In early stages, at least, the mechanical factors seem to predominate. Experiments in tissue cultures by Paul Weiss suggest to him that the structural organization of the "ground substance" in the embryo is the basic mechanism by which nerve fibers are oriented and that chemical, electrical or other factors operate indirectly by alter-

ing the physical structure of this medium. Other chapters deal with the functions of grafted limbs in terms of their nerve supply, including a summary and discussion of the experiments of Weiss on which he bases his "resonance theory" of neuromuscular action. The influence of peripheral sensory and motor nerves on central differentiation has been demonstrated by an extensive series of ingenious experiments, from which it appears that in early stages central differentiation is determined by intrinsic factors and that later peripheral influences of various kinds play an increasingly larger part. Chapter XII deals with experimental studies on segmentation, with evidence that in urodeles segmentation of the spinal cord and nerves is not primary but is dependent on the segmental arrangement of the mesoderm. In chapter XIII some interesting experiments describe how reflex behavior is modified by destruction of specific coordinating apparatus. This is a timely and authoritative summary of investigations on fundamental biologic problems in a field that is now being actively cultivated.

**Arthritis and Rheumatic Disease.** By Maurice F. Lautman, M.D., Consultant to the United States Public Health Service Clinic. With a foreword by Morris Fishbein, M.D., Editor, Journal of the American Medical Association. Whittlesey House Health Series, Morris Fishbein, M.D., Editor. Cloth. Price, \$2. Pp. 177, with 12 illustrations. New York & London: Whittlesey House, McGraw-Hill Book Company, Inc., 1936.

This book is the second volume in the Whittlesey House Health Series, published under the general editorship of Dr. Morris Fishbein. In the introduction, Dr. Fishbein recalls that it has been estimated that between two and three million Americans are afflicted with some form of arthritis. References to recent advances in its care are made available in this volume, which is written for the general reader. The author is well qualified to write this book; he is consultant to the United States Public Health Service Clinic and director of the department of the study of arthritis at one of the hospitals in Hot Springs, Ark., a center for the care of arthritis. The material is well arranged and well organized, the composition is excellent, and the illustrations are carefully chosen. The author discusses the merits of various forms of treatment, such as diet, massage, exercise, hydrotherapy and the application of heat, in the prevention and treatment of arthritis and related disorders. The book should be of value to all who suffer from arthritis or who have relatives afflicted with this condition. It may be safely recommended to all intelligent patients.

**Mental Nursing (Simplified).** By O. P. Napier Pearn, M.R.C.S., L.R.C.P., D.P.M., Deputy Medical Superintendent, Cane Hill Mental Hospital. Second edition. Cloth. Price, \$2. Pp. 328, with 23 illustrations. Baltimore: William Wood & Company, 1936.

The first half of the text has little to do with mental nursing but describes in a condensed handbook style anatomy, physiology, and medical and surgical diseases. A discussion of nursing procedure in mental disease finds only an occasional appearance in the remaining half of the book, which is largely devoted to condensed statements concerning psychology, psychoanalysis, mental disease and diseases of the central nervous system. Some of the definitions are too arbitrary; e. g.: "Dementia means weakness of mind. . . . Judgment is the mental process by which the attributes of a percept are considered separately." Although the book may be a suitable manual for the nursing staff of the hospital with which the author is connected, it contains so little material about the specific problems involved in mental nursing that one can hardly recommend it as a general textbook.

**Le fonctionnement du rein malade: Diurèse, albuminurie, edème, glycosurie. Classification des néphropathies. Recherches expérimentales et cliniques.** Par Paul Govaerts, professeur de clinique médicale à l'Université de Bruxelles. Paper. Price, 25 francs. Pp. 214. Paris: Masson & Cie, 1936.

The first part of this treatise is devoted to an evaluation of the theory of renal secretion. The author is convinced that the weight of evidence favors the theory of filtration and reabsorption. The discussion of the mechanism of diuresis is excellent, but the treatment of the nature of edema is unconvincing. The evaluation of tests of renal function is incomplete, since the author ignores the recent American contributions. The last section is devoted to the classification of renal diseases. Unfortunately he has here completely left out Addis, whose classification is so helpful to American clinicians. The subject has been

presented from the physiologic point of view because this is the best way for the clinician to understand renal disease. The author is to be congratulated on the emphasis that he places on this outlook.

**The Operations of Surgery. Volume I: The Upper Extremity, The Head and Neck, The Thorax, The Lower Extremity, The Vertebral Column.** By R. P. Rowlands, M.S., F.R.C.S., and Philip Turner, B.Sc., M.S., F.R.C.S., Consulting Surgeon to Guy's Hospital, London. Eighth edition. Cloth. Price, \$10. Pp. 1,045, with 435 illustrations. Baltimore: William Wood & Company, 1936.

This authoritative British work was originally published in 1889. R. P. Rowlands, the senior author, has passed away since the publication of the last edition. The unfinished portion of the work in this volume for which he was responsible was completed by Mr. W. H. Ogilvie, Mr. Grant Massie and Mr. A. R. Thompson. The primary purpose of the book, according to the preface, is "to give such a detailed account of operative surgery as to be of real assistance to surgeons recently appointed to responsible positions, and to candidates for higher examinations, as well as to provide a source of reference for the busy surgeon." This the authors accomplish unusually well. Each section lays great stress on the indications for and against operation, the anatomy, the technic in step by step detail, of one or more procedures, as well as the complications, errors and dangers that may occur. This volume covers operations on the upper extremity, head and neck, thorax, lower extremity and vertebral column. In the special fields, as otology, laryngology and neurosurgery, only well established and emergency operations are described, such as the general surgeon may be called on occasionally to undertake. The book is written clearly, simply and in such detail that the descriptions are easily followed. It is beautifully and adequately illustrated. The drawings, some of them in color, greatly enhance the value of the text. This work is an asset to every surgeon, young or old.

**Hygiene Guide-Book: A Book of Exercises and Aids in the Study of College Hygiene. Book II.** By Melvin Price Isaminger, Professor of Hygiene, Oregon State College, and Clair V. Langton, Professor of Hygiene, Oregon State College. Based on The Practice of Personal Hygiene. By Langton and Isaminger. Paper. Pp. 95, with illustrations. New York & London: Harper & Brothers, 1936.

The study of hygiene in secondary schools has been advancing rapidly in the past several years. Health is a subject of interest to every one and of importance to all. This book provides the student with two features that formerly were lacking in courses on health and hygiene: a good bibliography for collateral reading and actual exercises to determine the amount of knowledge acquired. Some of the tests given may be found confusing to the student. Thus, in exercise III he is asked to grade himself daily on six points as to signs of health. The sixth point is that a healthy person should be able "to have a store of reserve energy in time of emergency." What other mark can a person give himself besides a perfect score, since he is unable to determine his reserve unless it is called on? And emergencies do not occur daily. The student who conscientiously does the exercises in this book will be exceptionally well equipped with knowledge of health facts.

**Post-Graduate Surgery.** Edited by Rodney Malngot, F.R.C.S., Senior Surgeon to the Royal Waterloo Hospital. Volume II. Fabrikoid. Price, \$45, per set of 3 volumes. Pp. 1,747-3,572, with 1,134 illustrations. New York: D. Appleton-Century Company, Inc., 1936.

The surgery of the various regions of the body is well covered in orderly fashion, making the work a handy reference book. It might have been improved if there had been more citation of the literature. Most of the standard operative procedures are well described. The cross bow incision for exposure of the cerebellum is presented, although it has now fallen into disuse. Local anesthesia is well described and especially advocated for operations on the neck. Surgical removal of all cysts of the breast is advocated, no mention being made of repeated aspiration for the management of chronic cystic mastitis. The indications for electroresection of benign hypertrophy of the prostate are much more restricted than is the practice in the United States. There is an excellent chapter on injection therapy for the treatment of hernia, hemorrhoids, hydrocele and varicose veins. The chapter on orthopedic surgery does not cover the entire field, but the commoner deformities of the extremities are well presented and open wounds of the bones, joints and tendons are adequately dealt with.

**By-Effects in Salvarsan Therapy and Their Prevention, With Special Reference to the Liver Function.** By V. Genner, M.D., Associate in Dermatology, Finsen Medical Light Institute, Copenhagen. Paper. Price, 22 Danish kroner. Pp. 360. Copenhagen: Levin & Munksgaard, 1936.

The subject matter of this book is divided into three parts. The first is an analysis of the treatment reactions in a total of 5,526 syphilitic patients seen from 1913 to 1932 in the outpatient dermatologic clinic of the Rigshospital, University of Copenhagen. The second concerns 316 dispensary patients who were carefully questioned for treatment reactions, which were then correlated with the presence of urobilinogen and bile acids in the urine. The third section details more comprehensive use of liver function tests in 108 hospitalized syphilitic patients. The information presented in this volume could have been condensed in the form of a brief article, utilizing charts. The suggestion that urine examination for urobilinogen and bile acids is an aid in the early recognition of serious treatment reactions appears to be the chief contribution of the work.

**Symptoms and Signs in Clinical Medicine: An Introduction to Medical Diagnosis.** By E. Noble Chamberlain, M.D., M.Sc., M.B.C.P., Lecturer in Medicine, University of Liverpool. With a chapter on The Examination of Sick Children. By Norman B. Capon, M.D., F.R.C.P., Lecturer in Diseases of Children, University of Liverpool. Cloth. Price, \$8. Pp. 424, with 282 illustrations. Baltimore: William Wood & Company, 1936.

Although this book is largely a digest of the literature, with little that is new, the common symptoms and physical signs of disease are completely covered. Simple laboratory and instrumental procedures have been gathered together in separate chapters for easy reference. The text is well written and there are numerous splendid illustrations. The chapters on diseases of the heart and vessels and the digestive system are complete and deserve special commendation.

**Psychoanalysis Explained.** By Dorothy R. Blitzsten. With an Introduction by A. A. Brill, M.D. Cloth. Price, \$1. Pp. 66. New York: Coward-McCann, Inc., 1936.

In the introduction of this booklet Dr. Brill says: "It is sad to say that many medical practitioners and the great majority of lay persons still have a very peculiar idea of psychoanalysis, its aims and accomplishments. . . . After reading this manuscript by Dorothy Blitzsten, I feel that the author is to be congratulated on having performed a difficult task. I am sure that the book will be of great interest and enlightenment to all seekers of the truth about Freud's psychoanalysis." The subjects of the chapters are: psychoanalysis explained, why be analyzed? how psychoanalysis works, how it is done, who is the analyst? and whence comes psychoanalysis? The reviewer was unable to find tangible data or specific information.

**Voprosy legochnogo tuberkuleza v rannem det'skom vozraste.** Pod red. P. S. Medovikova i S. A. Reynberga, i pod obshego redakt'skogo direktora Instituta Yu. A. Mendeleeva. [Problems of Pulmonary Tuberculosis in Early Childhood.] Paper. Price, 5 rubles, 25 kopecks. Pp. 147, with 10 illustrations. Leningrad: Oglz-Biomedgiz, Leningradskoe otdelene, 1936.

The collection of papers dealing with the various phases of pulmonary tuberculosis presented here is the result of a joint study of the department of tuberculosis, of roentgenology and of pathology of the Clara Zetkin Scientific-Experimental Institute of Mother and Child Welfare. The many sided investigation of unusually rich material at the disposal of the institute should make this presentation of interest to the pediatrician and the roentgenologist.

**The Rise of Man Through His Handiwork. Dedicated to the Posterity of Our Much Maligned So-Called Savage Cavelman Ancestor.** By David Reisz. Introduction by Alfred Bosch. Boards. Pp. 36, with 5 illustrations. Cleveland, Ohio: Better Education Association, 1936.

Survival of man has been attributed to several factors. This author attempts to show that man exists today primarily because of his handiwork. While he fails to prove his hypothesis, he presents an ingenious explanation of right-handedness. It is because "animals are left handed" and so the animal is more vulnerable to attack by the right hand. In the case of an elephant hunt the hunter must be sure to be on the left of the animal; at least that is the impression one gets. On concluding the book the reader is still in a quandary as to what it is all about.

## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Medical Practice Acts: Determination by Licensing Agency of Reputability of Medical School Not Reviewable by Mandamus.**—The Illinois medical practice act (Smith-Hurd's Annotated Statutes, c. 91, sec. 12) permits a person licensed to treat human ailments without the use of drugs or medicines and without operative surgery to be examined for a license to practice medicine and surgery without restriction if the applicant presents evidence that he has completed two years of instruction in a college of liberal arts, or its equivalent, that he has completed in an institution teaching any method of treating human ailments, reputable and in good standing in the judgment of the department of registration and education, courses in materia medica, therapeutics, surgery, obstetrics, and theory and practice, and that he has completed an internship of not less than twelve months in a hospital reputable and in good standing in the judgment of the department. Omer C. Bader, the petitioner, was licensed to treat human ailments without the use of drugs or medicines and without the use of operative surgery. He applied to the Illinois department of registration and education for an examination to test his qualifications to practice medicine and surgery, claiming to have completed, at the Illinois College of Physicians and Surgeons, courses "of instruction in liberal arts for a period of two years in materia medica, therapeutics, obstetrics, surgery, and theory and practice," and, in Jefferson Park Hospital, a twelve months internship. The department refused to examine him and at his instance mandamus proceedings were instituted against the director of the department. The superior court, Cook County, James J. Kelly, Judge, directed a writ of mandamus to issue to compel the department to examine Bader, and the director appealed to the appellate court of Illinois, third division, first district.

Bader, the director contended, was not entitled to be examined because neither the Illinois College of Physicians and Surgeons nor the Jefferson Park Hospital was, in the opinion of the department, reputable and in good standing. There was no evidence introduced showing lack of good faith or prejudice on the part of the department in deciding that the medical school and hospital, respectively, were not in good standing, and the appellate court did not think that the mere fact that the department decided adversely to the petitioner constituted proof that the department's action was arbitrary or discriminatory. In the present action, the court said, Bader sought a writ of mandamus, an extraordinary remedy, and to obtain it he must show a clear and undoubted right to the relief demanded. The evidence showed that, after a full hearing, the department had decided adversely to the reputability and good standing of the school and hospital. Where an officer, in the exercise of discretionary power, has considered and determined his course of action, as the department did in this case, he has exercised his discretion and decided the matter and his action is not subject to review or control by mandamus. Surely, said the court, the exercise of this discretionary power, when once used, cannot be disturbed in a collateral proceeding.

The appellate court held that the superior court erred in issuing the writ, and the judgment for Bader was accordingly reversed.—*People ex rel. Bader v. Hallihan (Ill.)*, 1 N. E. (2d) 415.

**Malpractice: Failure to Discover Steel Particle in Eye.**—The head of a nail struck the plaintiff in his eye and he went for treatment to the Venice Industrial Emergency Hospital, a "medical office" owned and operated by the defendant physician. There he saw a physician employed by the defendant as a "resident physician," who with the aid of a magnifying glass examined the eye and found a lineal laceration of the cornea, with air bubbles present. According to the record, no attempt was made to examine the laceration to see how far it extended. Although the physician had an x-ray

apparatus in his office, he did not use it. The treatment apparently consisted of washing the eye out with a boric acid solution and the instillation of "argyrol." After ten days, the physician discharged the patient and the defendant sent to the insurance carrier of the plaintiff's employer a "Surgeon's Final Report," stating that the result of the treatment was "Recovery."

About three weeks thereafter, the plaintiff returned to the defendant's medical office complaining of pain in the eye and diminishing eyesight. The physician who had formerly attended him treated him for about seven days and then referred him to an ophthalmologist who, with the aid of an ophthalmoscope, discovered an opaque object embedded in the vitreous. It was a piece of steel, which was removed in an operation taking about ten minutes. A few days later, "the retina collapsed" and the plaintiff eventually lost the entire sight of his eye. He thereupon sued the defendant. The trial court granted a non-suit in favor of the defendant. The district court of appeal held, however, that the evidence established a prima facie case of malpractice and that the case should therefore have been submitted to the jury. [*McBride v. Saylin (Calif.)*, 48 P. (2d) 179; abstr. THE JOURNAL, Feb. 1, 1936, p. 410.]

On appeal, the Supreme Court of California adopted as a part of its own opinion the following portion of the opinion of the district court of appeal:

From the evidence in this case it is difficult to understand how a physician, looking at plaintiff's injured eye with air bubbles present and the laceration before him, could feel that he had exercised ordinary professional care and skill without making any examination to see how deeply the injury extended, or doing anything to give reasonable assurance that there was no foreign body in the eye. Dr. Bulpitt had an x-ray in his office but made no use of it in connection with plaintiff's injury. It would seem that with an injury to a portion of the human body as delicate and important as the eye, ordinary professional care and skill would at once suggest the importance of the most careful examination. In *Reynolds v. Struble*, 128 Cal. App. 716, 725, 18 P. (2d) 690, 694, in discussing the failure of a physician to use the x-ray in connection with the diagnosis of an injury, the court said: "There is further evidence that ordinary skill and care required the use of the x-ray as an essential aid to a skillful diagnosis, employing that skill and care possessed and used by the ordinary practitioner in that community. Indeed, it might be almost said that the use of the x-ray as an aid to diagnosis, in cases of fracture or other indicated cases, is a matter of common knowledge. Even the layman, when injured, of his own accord seeks the x-ray. And under the rule of *Jacobson v. Massachusetts*, 197 U. S. 11, 25 S. Ct. 358, 49 L. Ed. 643, 3 Ann. Cas. 765, the court could, in the absence of testimony, take judicial notice of this scientific advancement."

The Supreme Court agreed with the district court of appeal that the evidence established at least a prima facie case that the physician's lack of professional care and skill was the proximate cause of the loss of sight. The judgment of the trial court granting a non-suit for the defendant was therefore reversed.—*McBride v. Saylin (Calif.)*, 56 P. (2d) 941.

## Society Proceedings

### COMING MEETINGS

- American Academy of Orthopedic Surgeons, Cleveland, Jan. 11-13. Dr. Philip Lewin, 55 East Washington St., Chicago, Secretary.
- Eastern Section, American Laryngological, Rhinological and Otolological Society, Boston, Jan. 7. Dr. D. C. Jarvis, Quarry Bank Bldg., Barre, Vt., Chairman.
- Middle Section, American Laryngological, Rhinological and Otolological Society, Chicago, Jan. 11. Dr. Alfred Lewy, 25 East Washington St., Chicago, Chairman.
- Mid-Western Section, American Laryngological, Rhinological and Otolological Society, Chicago, Jan. 11. Dr. Frederick A. Figi, 436 Teuth Ave., S.W., Rochester, Minn., Chairman.
- Puerto Rico, Medical Association of, San Juan, Dec. 18-20. Dr. Dolores M. Pincero, Ave. Fernandez Juncos, Parada, 19, Santurce, Secretary.
- Society of American Bacteriologists, Indianapolis, Dec. 28-30. Dr. I. L. Baldwin, College of Agriculture, University of Wisconsin, Madison, Wis., Secretary.
- Society of Surgeons of New Jersey, Newark, Jan. 6. Dr. Walter B. Mount, 21 Plymouth St., Montclair, Secretary.
- Southern Section, American Laryngological, Rhinological and Otolological Society, Memphis, Tenn., Jan. 13. Dr. Charles D. Blassingame, Physicians and Surgeons Bldg., Memphis, Tenn., Chairman.
- Southern Surgical Association, Edgewater Park, Miss., Dec. 15-17. Dr. E. Alton Ochsner, 1430 Tulane Ave., New Orleans, Secretary.
- Western Section, American Laryngological, Rhinological and Otolological Society, San Diego, Calif., Jan. 30-31. Dr. David R. Higbee, 3243 Fourth Ave., San Diego, Calif., Chairman.

# Current Medical Literature

## AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers in continental United States and Canada for a period of three days. Periodicals are available from 1926 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them. Titles marked with an asterisk (\*) are abstracted below.

## American J. Digestive Diseases and Nutrition, Chicago

3: 519-616 (Oct.) 1936

- \*Studies on Effect of Therapeutic Doses of Morphine on Gastric Secretion. K. C. Wang, J. V. Prohaska and W. L. Palmer, Chicago.—p. 519.
- Endamoeba Histolytica and Other Protozoa in Personnel of Chicago Hospital. H. E. McDaniels, Eleanor Burton and L. Arnold, Chicago.—p. 526.
- Colon in Mental Disease: I. Dementia Praecox. P. G. Schube, Boston.—p. 528.
- Gastroscopy: Observation in 100 Cases. E. Boros, New York.—p. 533.
- Mesenteric Vascular Occlusion: Report of Instance with Acute Venous Thrombosis Following Splenic Artery Embolism and Infarction. E. Milch and G. Masotti, Buffalo.—p. 536.
- Investigation into Production of Proteolytic Ferment in Duodenum Which Will Increase Antianemic Efficacy of Liver: Its Relationship to Cause of Pernicious Anemia. G. Cheney, San Francisco.—p. 541.
- Histidine in Experimental Gastric Ulcer. C. Windwer and M. J. Matzner, Brooklyn.—p. 547.
- Studies in Bowel Drainage. A. W. Oelgoetz, P. A. Oelgoetz and J. Wittekind, Columbus, Ohio.—p. 549.
- Elimination of Various Dyes from Pavlov Pouch of Dogs. S. Morrison, D. I. Reeves and R. E. Gardner, Baltimore.—p. 551.
- Probable Frequency of Allergic Shock. W. T. Vaughan, Richmond, Va., and D. M. Pipes, Shreveport, La.—p. 558.
- Clinical Significance of Indicanuria. H. W. Soper, St. Louis.—p. 564.
- Pathology and Treatment of Intestinal Amebiasis. T. T. Mackie, New York.—p. 566.
- Pectin as Detoxication Mechanism. I. A. Manville, Elizabeth M. Bradley and A. S. McMinis, Portland, Ore.—p. 570.
- Phenolphthalein Studies: IV. Phenolphthalein Solubilities. B. Fantus and J. M. Dyniewicz, Chicago.—p. 573.
- \*Bile Salt Therapy in Liver and Gallbladder Disease. B. D. Rosenak and K. G. Kohlstaedt, Indianapolis.—p. 577.
- Clinical and Therapeutic Status of Cases of Colonic Diverticulosis Seen in Office Practice. J. H. Willard and H. L. Bockus, Philadelphia.—p. 580.

**Effect of Morphine on Gastric Secretion.**—Wang and his co-workers made their observations on thirty-three patients, chiefly with peptic ulcer, and two dogs provided with isolated gastric pouches. Morphine sulfate was administered subcutaneously in doses of 0.01 Gm. It was found that morphine in ordinary therapeutic dosage seems to have a fairly uniform inhibitory effect on the gastric secretion in man under fasting conditions. The reduction of the volume of the basal secretion was more marked than that of the free acidity, although in one out of every three cases achlorhydria took place for some time after the administration of morphine and in approximately half of the series there was a distinct lowering of the acidity in comparison with the fasting values. The depressive effect of morphine on gastric secretion seemed to have a close relationship with the mental state of the patient. The more drowsy he became, usually the more marked was the depression. Those who became talkative or remained active after the medication gave the least response, and, in fact, occasionally a contrary effect. It was seen that the depressive effect of morphine could be readily overshadowed by a new stimulus, whether a purely psychic one, such as the taking of food by the patient in a neighboring bed, or a chemical one, such as an injection of histamine. In the instances in which morphine seemed to act as a stimulant, the effect was a very weak one compared with that evoked by histamine or by a psychic stimulus. The dog does not react quite the same to a small dose of morphine as man. The Pavlov dog showed a transient rise in volume and acidity after the injection of morphine on most occasions, while the complete pouch dog showed more inhibition than stimulation. The amount of stimulation in both dogs, however, was far less pronounced than those evoked by either food or histamine. Tolerance did play some part, as the dogs seemed

to develop fewer symptoms with the same dose of morphine toward the latter part of the experiment. The gastric secretions, nevertheless, showed no striking changes.

**Bile Salt Therapy in Gallbladder Disease.**—Rosenak and Kohlstaedt treated sixty-three patients having disease of the gallbladder and liver with bile salts over a period of nine months. In twenty-two cases of proved cholelithiasis, pain was not satisfactorily removed by this medical treatment. However, better results were obtained in relief of constipation and digestive symptoms. In all patients with definitely proved cholelithiasis who were suitable surgical risks, surgery was recommended. The treatment was more successful in sixteen patients with cholecystitis without proof of the presence of stones. Pain was entirely relieved in a large proportion of them, and the marked improvement of digestive symptoms in all was most striking. These results compare satisfactorily with those obtained in this type of patient with surgical treatment. In twenty-five patients with symptoms indicative of gallbladder dysfunction but in whom positive evidence of actual disease of the gallbladder may be lacking, very satisfactory results were obtained. Furthermore, when bile salts were discontinued temporarily in these patients, all symptoms returned and similar results could not be obtained by means of dietary control alone or by means of cathartics.

## American Journal of Surgery, New York

34: 1-198 (Oct.) 1936

- Morphine as an Aid in Diagnosing Acute Abdominal Affections. H. A. Singer, Chicago.—p. 5.
- Diseases of Thyroid Gland: Correlation of Clinical and Pathologic Material. F. Glenn and C. Y. Hauch, New York.—p. 12.
- Luxatio Testis Traumatica and Experimental Study of Mechanism. R. H. Herbst and H. J. Polkey, Chicago.—p. 18.
- \*Clinical and Experimental Study of Lithotripsy. F. P. Twinem, New York.—p. 34.
- Nephroptosis: Review of Literature and an Analysis of Palliative or Operative Treatment in 266 Cases of Primary Nephroptosis. C. K. Church, New York.—p. 41.
- Mercresin: New Surgical Germicide. W. G. Maddock, A. M. Boyden and R. L. Malcolm, Ann Arbor, Mich.—p. 47.
- Treatment of Acute Empyema. M. P. Travers, Miami Beach, Fla.—p. 50.
- Critical Analysis of Methods of Treatment of Rectal Carcinoma, Particularly Electrocoagulation. R. T. Pettit and J. H. Edgcomb, Ottawa, Ill.—p. 57.
- Observations and Aids in Rectal and Vaginal Examinations During Labor. L. Drosin, New York.—p. 65.
- Ventral Position for Drainage in Ruptured Appendicitis. H. Glascock and H. Glascock Jr., Raleigh, N. C.—p. 69.
- Two Quantitative Tests of Peripheral Vascular Obstruction. W. S. Collens and N. D. Wilensky, Brooklyn.—p. 71.
- Intestinal Obstruction: Diagnosis, Biochemistry and Relationship to Therapy. J. Kaufman, New York.—p. 72.

**Clinical and Experimental Study of Lithotripsy.**—To determine the limits of crushing power of lithotrites, Twinem employed five instruments, four of the visualizing type and one of the nonvisualizing type. In performing these experiments, the instruments were mounted on a large testing machine and equal force was applied to the jaws in opposite directions. The points on the jaw at which the force was applied were selected to approximate as nearly as possible the actual conditions of lithotripsy. In each case the break occurred at the shoulder of the movable blade. To determine the ratio of the amount of force required to crush a ball having the consistency of a urinary calculus to the diameter of the ball to which the force is applied, twenty spheres of a mixture of sand and cement were constructed, ten averaging 1.35 inches in diameter and the other ten averaging 2.07 inches in diameter. It was found that the amount of pressure required to break the spheres of lesser size averaged 1,545 pounds and the pressure required to break the larger spheres averaged 2,810 pounds. This experiment indicates that the amount of force required to crush a ball of friable consistency, such as a calculus, increases at a little more rapid rate than the diameter. Of 105 cases of vesical calculus in which operation was performed since the foundation of the Brady department, seventy-three were treated by suprapubic lithotomy with a mortality of 4.1 per cent; thirty-two cases have been treated by litholapaxy with three deaths, a mortality of 9.4 per cent. The choice of operation depends on the age and physical condition of the patient, the size and hardness of the stone, the presence or absence of urethral stricture or

associated prostatic hypertrophy, and the experience of the surgeon. In comparing the results, and particularly the mortality, of suprapubic operation and of crushing, it should be considered that the largest and hardest stones are handled by cutting and also that recurrence is more frequent following litholapaxy by reason of the fragments that remain. For the occasional operator, suprapubic lithotomy is the safer procedure. For one who has had considerable experience and has developed a proper technic, litholapaxy is the operation of choice in a large number of properly selected cases.

### American Journal of Tropical Medicine, Baltimore

16: 499-646 (Sept.) 1936

- Sprue: Clinical Summary. A. C. Reed, San Francisco.—p. 499.  
Is Lymphogranuloma Inguinale a Systemic Disease? E. von Haam and R. d'Aunoy, New Orleans.—p. 527.  
Report on Use of Atabrine in Prophylaxis of Malaria. W. N. Bispham, Atlanta, Ga.—p. 547.  
\*Hemoglobinuric Fever: Is It an Allergic Phenomenon? M. Fernán-Núñez, Milwaukee.—p. 563.  
Anopheles Walkeri Theobald as Vector of Plasmodium falciparum (Welch). S. F. Kitchen and G. H. Bradley, Tallahassee, Fla.—p. 579.  
Localization of Geographic Distribution of McCoy Strain of Plasmodium Vivax. M. F. Boyd, S. F. Kitchen and H. Muench, Tallahassee, Fla.—p. 583.  
Seasonal Variations in Characteristics of Vivax Malaria. M. F. Boyd, S. F. Kitchen and H. Muench, Tallahassee, Fla.—p. 589.  
Verrucous Dermatitis Caused by Hormodendrum Pedrosoi (Chromoblastomycosis) in North Carolina: Case. D. S. Martin, R. D. Baker and N. F. Conant, Durham, N. C.—p. 593.  
Carbarsone: Its Action on Intestinal Trichomonads of Rats in Vivo. A. Gabaldon, Baltimore.—p. 621.

### Hemoglobinuric Fever: An Allergic Phenomenon.—

During a period of five years in the Magdalena river valley of Colombia, Fernán-Núñez treated fifty-two cases of hemoglobinuric fever and observed an equivalent number of such patients of other physicians. He reviews the theories of the etiology of the disease and submits evidence to support his thesis that blackwater fever is essentially of allergic origin. It is assumed to be definitely associated with infestation by Plasmodium falciparum and its phenomena to represent an allergic response to that organism, the acute paroxysms being of the nature of anaphylactic attacks. This allergy is evidently the result of a malfunctioning of the immunity mechanism in malaria, the attacks often being precipitated by quinine, which acts on the parasites to liberate the allergen in intoxicating amounts. Such attacks might also be brought on by exposure, by reinfection with malignant tertian plasmodia or by intercurrent diseases, thus partaking of the nature of an anamnestic reaction. A minute intracutaneous injection of a formalized suspension of Plasmodium falciparum (plasmodoid), or of ground plasmodia suspended in glycerin, produced a localized reaction in persons allergic to the products of the organism. Such individuals are susceptible to hemoglobinuric fever and, if they are removed systematically from malaria districts, the disease practically disappears from such areas. In nearly all the tissues of eleven patients examined at necropsy the notable presence of eosinophils was suggestive, but, as eosinophilia is somewhat common in malaria, its significance in blackwater fever is difficult to interpret. Considerable edema was observed in many organs, particularly those containing reticulo-endothelial elements in abundance, an observation that may or may not suggest anaphylaxis under the circumstances.

### Anatomical Record, Philadelphia

66: 253-386 (Oct. 25) 1936

- Potency of Pituitary Implants After Several Days in Muscles or Peritoneal Cavity. F. E. Emery, Buffalo.—p. 253.  
Inhibition of Molting in Urodeles Following Thyroidectomy or Hypophysectomy. C. M. Osborn, Boston.—p. 257.  
Relation of Posterior Pituitary to Water Exchange in Cat. W. R. Ingram and C. Fisher, Chicago.—p. 271.  
Phylogenetic Arrangement of Muscular System. A. B. Howell, Baltimore.—p. 295.  
Histologic Studies on Lipins: II. Cytologic Analysis of Liposomes in Adrenal Cortex of Guinea-Pig. N. L. Hoerr, Chicago.—p. 317.  
Histologic Aspects of Function of Malignant Body in Living Frog's Kidney, Based on Studies with Fluorescence Microscope. E. Singer, with technical assistance of Elizabeth B. Cuzzort, New York.—p. 343.  
Vitamin C Technic as Contribution to Cytology. G. Bourne, Canberra, Australia.—p. 369.

### Annals of Surgery, Philadelphia

104: 481-800 (Oct.) 1936. Partial Index

- \*Studies in Brain Injury: Increased Cerebrospinal Fluid Pressure from Blood in Cerebrospinal Fluid: Experimental Study. W. H. Parker and E. P. Lehman, University, Va.—p. 492.  
Reactions Following Operations for Hyperthyroidism. J. deJ. Penberthy, Rochester, Minn.—p. 507.  
Pericardial Resection in Chronic Constrictive Pericarditis. E. D. Churchill, Boston.—p. 516.  
Tumors of Chest Wall. K. Speed, Chicago.—p. 530.  
Use of Intercostal Muscle in Closure of Bronchial Fistulas. N. S. Shenstone, Toronto.—p. 560.  
Traumatic Surgery of Lungs and Pleura: Analysis of 1,009 Cases of Penetrating Wounds. F. K. Boland, Atlanta, Ga.—p. 572.  
\*Ten Year Study of Empyema in Children (1926-1936). G. C. Penberthy and C. D. Benson, Detroit.—p. 579.  
Gastric Acidity Following Operations for Gastric and Duodenal Ulcer: Its Effect on Question of Partial Gastrectomy. W. Walters, Rochester, Minn.—p. 585.  
Technic for Management of Gastrojejunal Ulcers With or Without Gastrocolic or Jejunocolic Fistula. F. A. C. Scrimger, Montreal.—p. 594.  
Resection of Rectum and Rectosigmoid by Single or Graded Procedures. F. W. Rankin, Lexington, Ky.—p. 628.  
\*One Stage Procedure of Treatment of Carcinoma of Rectum. F. A. Collier and H. K. Ransom, Ann Arbor, Mich.—p. 636.  
Imperforate Anus with Rectovaginal Cloaca. H. B. Stone, Baltimore.—p. 651.  
Operative Insulin Crisis in Resection of Pancreas. Le G. Guerry and G. T. McCutchen, Columbia, S. C.—p. 662.  
Cholecystoduodenostomy Combined with Pyloric Exclusion. P. Sandblom, Orebro, Sweden; G. S. Bergh and A. C. Ivy, Chicago.—p. 702.  
\*Prevention of Peritoneal Adhesions by Papain: Clinical Study. A. Ochsner and A. Storck, New Orleans.—p. 736.  
Delayed Wound Healing Following Nephrectomy for Tuberculosis: Analysis of Cause. E. Beer and L. Edelman, New York.—p. 748.  
Role of Surgery in Treatment of Actinomycosis. O. H. Wangenstein, Minneapolis.—p. 752.  
Surgical Treatment of Essential Hypertension. G. J. Heuer, New York.—p. 771.  
\*Demonstration of Hormones in Tumors. D. Lewis and C. F. Geschickter, Baltimore.—p. 787.

**Increased Cerebrospinal Fluid Pressure in Brain Injury.**—Parker and Lehman studied the cerebrospinal fluid pressure and anatomic changes following a standard laceration of the brain in dogs. Owing to a definite association between the pressure curves and the amount of subarachnoid bleeding observed, an attempt was made to separate a rise in pressure due to the increased volume of blood in the cerebrospinal fluid from a rise due to some other mechanism. The replacement of measured quantities of cerebrospinal fluid by equal amounts of blood and its separate constituents was also observed. In experimental laceration of the brain in the dog, the cerebrospinal fluid pressure varies directly with the amount of blood that escapes into the subarachnoid space and not with the amount of bleeding within the cerebrum. In spite of the previous withdrawal of an equal quantity of cerebrospinal fluid, a rise in cerebrospinal fluid pressure occurs in the dog following the introduction of a solution of hemoglobin, defibrinated blood and blood serum into the cisterna magna. The introduction of twice the quantity of blood serum will approximately double the percentage rise of cerebrospinal fluid pressure. The introduction of washed red cells produces no increase in cerebrospinal fluid pressure over a period of as long as five hours. Microscopic study of the brains following the partial replacement of cerebrospinal fluid by blood and its separate constituents reveals inflammatory changes, which are not correlated with cerebrospinal fluid pressure changes. It is probable that the phenomena reported are the result of an increase of osmotic pressure of the cerebrospinal fluid due to the introduction of blood proteins. The approach to the problem of increased intracranial pressure must include consideration of the phenomena of osmosis as operative in bloody cerebrospinal fluid.

**Empyema in Children.**—In the ten year period that Penberthy and Benson consider, 5,868 cases were classified as pneumonia, and of this number 407 patients developed empyema that required surgical drainage. The type or virulence of the pneumonia preceding the empyema is the most important factor in determining the mortality rate of empyema. Empyema occurred as a complication in 8.9 per cent of the cases classified as lobar pneumonia and in only 1.2 per cent of those classified as bronchopneumonia. The mortality of lobar pneumonia for this period was 14.3 per cent and that of bronchopneumonia 44.5 per cent. The different mortality rates of empyema reported from various cities may be explained by the variance of virulence of the epidemic of the preceding pneumonia in

relation to geographic location. A uniform procedure of treatment has been practiced in the surgical drainage of the authors' cases consisting of aspiration up to the stage when frank pus is obtained. At this time the trocar-cannula-catheter method of closed drainage is instituted under local anesthesia. Closed drainage is maintained by applying a hemostat to the end of the catheter. Aspirations are carried out every four hours. With this type of closed drainage there may be some leakage of pus around the tube, but this occurs at a time when the empyema cavity is practically empty and should be no cause for alarm or for the changing of the catheter. The original catheter is left in place usually from twelve to eighteen days, at which time it is cut and allowed to remain open as a drain. In the event of clinical evidence of retention, the catheter is replaced by a larger tube. Among the 407 patients treated by the combined form of closed and open method of surgical drainage there was an average mortality of 10.3 per cent. Of the 365 patients who survived, all were clinically cured of the empyema except three. The latter required major operative intervention. One case was classified as tuberculous empyema with a mixed infection, in which closed drainage, followed by thoracoplasty in two stages, gave a good clinical end result. One patient required an unroofing with a subsequent good result, while in the remaining patient decortication was necessary. The latter patient died twelve hours postoperatively of surgical shock. Fifteen patients required rib resection and open drainage. The average hospital stay was 48.6 days.

**Treatment of Carcinoma of Rectum.**—Coller and Ransom have endeavored to follow the methods of Miles in treating patients with carcinoma of the rectum or rectosigmoid. The diagnosis was proved in every case by biopsy or the examination of an operative specimen. It was found that 114 cases were unsuitable for radical operation because of the far advanced lesion or because of associated disease. The abdominoperineal operation was carried out in two stages on twenty-seven patients and in one stage on seventy-two patients. The greatest contribution to the success of this operation is the principle of proper rehabilitation of the patient so strongly insisted on by Miles and Rankin. The anesthetic employed has uniformly been spinal, supplemented if necessary with light nitrous oxide and oxygen. Following the operation a transfusion is given if the patient shows any signs of shock or if he fails to react satisfactorily. An advantage of the two stage operation is that the colostomy is established and working while in the one stage procedure the difficulties of regulating the colostomy are superimposed on a patient recovering from a severe operation. The average time of hospitalization after operation is twenty-seven days. The posterior wounds are healed in about three months. While the authors attempted curative operations in 49 per cent of the patients, the true operability was probably not greater than 35 per cent. The mortality has risen (26 per cent in the two stage operation and 16.5 per cent in the one stage procedure) as they have increased the percentage of those operated on. Every patient more than 65 years of age should be considered most carefully before operation is advised. Patients with marked hypertension and cardiovascular disease should probably be treated conservatively. If obstruction is not present and if plenty of time is taken to prepare the patient for operation, the mortality from the operation should not be greater than that of the two stage operation.

**Prevention of Peritoneal Adhesions.**—Ochsner and Storck report 231 cases in which papain solution was used to prevent the reformation or initial formation of peritoneal adhesions. Many of these patients were considered to have a "keloid tendency" or "adhesion diathesis," because 122 patients in the group had had previous operations, in 46.9 per cent of which the operation had been for adhesions and intestinal obstruction. The period of observation following the division of adhesions and use of papain was one year or longer in 82.1 per cent. In a total of 224 patients in which the clinical results were given, the results were classified as excellent in 186 and good in thirteen. In seventeen cases the results were classified as fair and in eight as poor. In thirty-seven cases laparotomy was repeated following the use of papain. In twenty-two of these there were no adhesions in the abdomen, although many and massive adhesions had been present prior to their division and to the use of papain; in thirteen a number of adhesions were

present, but many less than before its use, whereas in two there was a reformation of many adhesions. There is a close correlation between the clinical results (88.8 per cent satisfactory), the observations made at operations subsequent to the use of papain (94.5 per cent satisfactory results) and the experimental observations (90.9 per cent satisfactory results) done five years ago. The four deaths in the series of 231 cases could not be attributed to the use of the papain solution.

**Demonstration of Hormones in Tumors.**—Lewis and Geschickter draw no conclusions from the results of their bioassays regarding the causal relationship between the hormones and tumor formation. In certain benign lesions of the breast, such as cystic disease and fibro-adenomas, hormones may be recovered in a high percentage of cases, while they are inconstant or absent in carcinoma of the breast. The methods in use for extracting hormones from tissue do not necessarily yield the total amount of active substance from the tissue. It has been shown, particularly in regard to estrogenic substances, that various methods of extraction will yield different quantitative results or a variety of active fractions. Preliminary hydrolysis of the tissue with hydrochloric acid or injection of an emulsion of freshly ground tissue (when not too toxic) may give higher values than the routine method of hot alcoholic extraction. While the structural formula for the female sex hormone is known (ketohydroxyestrin and trihydroxyestrin), estrogenic activity has been demonstrated for a series of condensed ring compounds of similar structures which are closely related to the sterols and bile acids. A varied group of substances likewise may produce the Aschheim-Zondek reaction. The presence of these endocrine substances in new growths would seem, however, to have significance in the physiology of the growth and to explain more satisfactorily than any theory yet advanced why tissues in a new growth reproduce themselves locally and in metastases.

### Archives of Internal Medicine, Chicago

58: 577-764 (Oct.) 1936

- \*Exercise in Diabetes Mellitus. A. Marble and Rachel M. Smith, Boston.—p. 577.
- Cholesterol Content of Blood in Diabetic Patients Fed Diets Rich in Fat. R. H. Freyberg, L. H. Newburgh and W. A. Murrill, Ann Arbor, Mich.—p. 589.
- Pneumococcus Type II and Type V Infections. M. Finland, Boston, and H. F. Dowling, Washington, D. C.—p. 598.
- Nonbacterial Thrombotic Endocarditis: Classification and General Description. L. Gross and C. K. Friedberg, New York.—p. 620.
- Id.: Associated with Acute Thrombocytopenic Purpura. C. K. Friedberg and L. Gross, New York.—p. 641.
- Id.: Associated with Prolonged Fever, Arthritis, Inflammation of Serous Membranes and Widespread Vascular Lesions. C. K. Friedberg, L. Gross and K. Wallach, New York.—p. 662.
- \*Pathology and Pharmacology of Cardiac Syncope and Sudden Death. M. H. Nathanson, Los Angeles.—p. 685.
- Effect of Prolonged Dietary Restriction on Patients with Cardiac Failure. S. H. Proger and H. Magendantz, Boston.—p. 703.

**Exercise in Diabetes Mellitus.**—Marble and Smith found that in the fasting patient (from twelve to fourteen hours) with severe or moderately severe diabetes who has received no injection of insulin for several hours the immediate result of exercise (running, rowing a machine or climbing stairs) may be that of raising the blood sugar level. Exercise apparently stimulates the breakdown of glycogen in the liver, with a resulting outpouring of sugar into the blood stream. It is probable that this glycogenolysis is attributable in part to an increased secretion of epinephrine caused by the exercise. The diabetic patient of today should lead an essentially normal life, with an average amount of activity. If the diabetic condition is imperfectly controlled and if the body has been supplied with an inadequate amount of insulin, exercise instead of conferring benefit may actually increase the hyperglycemia and glycosuria. For exercise to exert its maximal benefit, sufficient insulin must be available in the body at the time of exercise. Practically speaking, after he arises in the morning the logical sequence for the diabetic patient is insulin, exercise and breakfast rather than exercise, insulin and breakfast. The exercise should be mild enough so that undue fatigue is not produced. The further advantage of two, three or more additional periods of exercise during the day is obvious.

**Pathology of Cardiac Syncope.**—Nathanson states that structural changes in the heart are usually inadequate to explain either temporary or fatal cardiac syncope. There are two

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physiologic mechanisms in the heart which may cause sudden cessation of the circulation: cardiac standstill and ventricular fibrillation. In the present study it was possible to manipulate the human cardiac mechanism (1) mechanically, producing cardiac standstill by reflex vagus stimulation, and (2) chemically, inducing a prefibrillation state in the ventricles by sympathetic stimulation with epinephrine administered intravenously. Both of these physiologic states may be definitely modified by drugs. Drugs of the epinephrine series in proper dosage will prevent cardiac standstill. Prefibrillation rhythm may be prevented by the use of quinidine or of acetyl-beta-methylcholine. Protection of the sympathetic nervous mechanism by general measures is indicated. The studies suggest an approach by drug therapy and by general measures toward the prevention of cardiac syncope and sudden death.

### Archives of Otolaryngology, Chicago

24: 413-552 (Oct.) 1936

- Chronic Sinusitis: Endemic Focus and Carrier of the Common Cold. E. C. Sewall, San Francisco.—p. 413.  
Neosynephrin Hydrochloride in Otolaryngology. W. M. Fitzhugh Jr., Philadelphia.—p. 425.  
\*Pathogenic Fungi. E. J. Whalen, Hartford, Conn.—p. 436.  
Cholesteatoma Verum Tympani: Its Relationship to First Epibranchial Placode. R. W. Teed, Ann Arbor, Mich.—p. 455.  
Late Results Following Operation for Carcinoma of Larynx. E. N. Broyles, Baltimore.—p. 475.  
Follow Up of Patients Eight Months After Tonsillectomy. H. D. Smith, Boston.—p. 488.

**Pathogenic Fungi.**—In twelve months Whalen encountered, in the routine of private practice, seventeen patients with verified fungous infection of the ear, nose, throat and respiratory tract. The placing of the suspected material on a glass slide, with the addition of a few drops of alcoholic solution of sodium sulfide, and covering with a cover glass is satisfactory for a wet specimen. Gram's stain is used if a stained specimen is required. Shaw's medium is made use of when cultures of the material are to be taken. Modification of this procedure will be found necessary when the identity of the fungus is obscure. After examination of the wet specimen, an attempt at cultivation may be made. The pathogenic fungi that have been found to affect the ear, nose, throat and respiratory tract have given rise to moniliasis, sporotrichosis, blastomycosis, actinomycosis, coccidioidosis, torulosis and aspergillosis. Other fungi have been found to be parasitic in man, such as *Coccidioides immitis*, which produces a granulomatous disease termed coccidioidal granuloma. A second disease condition similar to this, termed torulosis and caused by a yeastlike parasite, *Torula histolytica*, is also classed with the infectious granulomas. Both these organisms can and frequently do produce an infection of the pulmonary system. The changes produced in pulmonary tissue are similar to those caused by tuberculosis, by actinomycosis and by aspergillosis.

### Delaware State Medical Journal, Wilmington

S: 199-216 (Oct.) 1936

- History of Medicine in Delaware. J. B. Waples, Georgetown.—p. 199.  
Why Am I a Doctor? F. S. Winslow, Rochester, N. Y.—p. 201.  
Psychiatric Thoughts. M. A. Tarumianz, Farnhurst.—p. 202.

### Journal of Bacteriology, Baltimore

32: 361-472 (Oct.) 1936

- Sonic Energy as Lethal Agent for Yeast and Bacteria. T. D. Beckwith and C. E. Weaver, Los Angeles.—p. 361.  
Critical Study of Some of the Growth-Promoting and Growth-Inhibiting Substances Present in Brilliant Green Bile Medium. C. N. Stark and L. R. Curtis, Ithaca, N. Y.—p. 375.  
Increased Growth and Gas Production by *Escherichia Aerobacter* Organisms in Brilliant Green Bile Medium Containing Sodium Formate. C. N. Stark and L. R. Curtis, Ithaca, N. Y.—p. 385.  
Substitutes for Potassium in Metabolism of Lowest Fungi. O. Rahn, Ithaca, N. Y.—p. 393.  
Serologic Agglutination of Obligate Anaerobes *Clostridium Paraputrificum* (Bienstock) and *Clostridium Capitovalis* (Snyder and Hall). M. L. Snyder, Denver.—p. 401.  
Mechanism of Nonspecific Serum Agglutination of Obligate Anaerobes *Clostridium Paraputrificum* and *Clostridium Capitovalis*. M. L. Snyder, Denver.—p. 411.  
Correlative Studies of Microscopic and Plate Methods for Evaluating Bacterial Population of Sea. Margaret Hotchkiss and S. A. Waksman.—p. 423.  
Changes in Electrokinetic Potential of Bacteria at Various Phases of Culture Cycle. L. S. Moyer, New Haven, Conn.—p. 433.

### Journal of Comparative Neurology, Philadelphia

64: 365-530 (Oct. 15) 1936. Partial Index

- Efferent Fibers of Edinger-Westphal Nucleus. R. L. Crouch, Columbia, Mo.—p. 365.  
Alterations Which Occur in Mossy Terminals of Cerebellum Following Transection of Brachium Pontis. R. S. Snider, St. Louis.—p. 417.  
Innervation of Adrenal Glands. W. H. Hollinshead, Durham, N. C.—p. 449.  
Effect of Growth Hormone on Brain and Brain Weight-Body Weight Relations. H. S. Rubinstein, Baltimore.—p. 469.  
Study of Pacinian Corpuscle. F. C. Lee, Baltimore.—p. 497.

### Journal of Experimental Medicine, New York

64: 673-830 (Nov. 1) 1936

- Further Studies on Typhus Fever: Homologous Active Immunization Against European Strain of Typhus Fever. H. Zinsser and A. Macchiavello, Boston.—p. 673.  
Studies on Mechanism of Immunity in Typhus Fever: I. Rickettsia Prowazeki in Different Stages of Typhus Lesion. M. Ruiz Castaneda, Boston.—p. 689.  
Id.: II. Allergic and Toxic Reactions Produced with Rickettsia Prowazeki. M. Ruiz Castaneda, Boston.—p. 701.  
Studies on Sensitization of Animals with Simple Chemical Compounds: III. Anaphylaxis Induced by Arsphenamine. K. Landsteiner and J. Jacobs, New York.—p. 717.  
\*Acquired Resistance of Growing Animals to Certain Neurotropic Viruses in Absence of Humoral Antibodies or Previous Exposure to Infection. P. K. Olitsky, A. B. Sabin and H. R. Cox, New York.—p. 723.  
Humoral Antibodies and Resistance of Vaccinated and Convalescent Monkeys to Poliomyelitis Virus. A. B. Sabin and P. K. Olitsky, New York.—p. 739.  
Studies on Uncomplicated Coryza of Domestic Fowl: VII. Cultivation of Coccobacilliform Bodies in Fertile Eggs and in Tissue Cultures. J. B. Nelson, Princeton, N. J.—p. 749.  
Id.: VIII. Infectivity of Fetal Membrane and Tissue Culture Suspensions of Coccobacilliform Bodies. J. B. Nelson, Princeton, N. J.—p. 759.  
Standardization of Longevity Against Dose in Experimental Tuberculosis by Intracerebral Inoculation. K. C. Smithburn, New York.—p. 771.  
Susceptibility of Swine to Virus of Human Influenza. R. E. Shope, Princeton, N. J., and T. Francis Jr., New York.—p. 791.  
Studies on Soluble Precipitable Substances of Vaccinia: I. Dissociation in Vitro of Soluble Precipitable Substances from Elementary Bodies of Vaccinia. J. Craigie and F. O. Wishart, Toronto.—p. 803.  
Id.: II. Soluble Precipitable Substances of Dermal Vaccine. J. Craigie and F. O. Wishart, Toronto.—p. 819.

**Acquired Resistance to Certain Neurotropic Viruses.**—Olitsky and his associates furnish evidence that resistance develops in some animals with increasing age only as regards certain neurotropic viruses introduced into the body by definite peripheral routes. This type of resistance is not general and systemic in nature, for introduction of the virus directly into the brain finds both young and old equally susceptible. This naturally acquired resistance was found to be most marked in old mice against the Indiana and New Jersey strains of vesicular stomatitis virus, when inoculations were made by the intranasal, subcutaneous, intramuscular, intraperitoneal and intravenous routes, but not by the intracerebral. The development of this resistance varied in different mice, becoming apparent as early as the thirtieth day of life in some and remaining absent in others even at 1 year of age. The change that renders old mice refractory to peripheral inoculation with the two immunologically distinct strains of vesicular stomatitis virus does not necessarily induce a similar state against other viruses. Thus, while the majority of older mice exhibit a similar resistance against the Western strain of equine encephalomyelitis virus, it is not readily demonstrable with the immunologically distinct Eastern strain. Nor were older animals refractory to peripheral inoculations of pseudorabies virus in guinea-pigs and poliomyelitis virus in rhesus monkeys.

### Journal of Nervous and Mental Disease, New York

S4: 497-620 (Nov.) 1936

- Response of Schizophrenic Subjects to Hypoglycemic Insulin Shock. J. Wortis, New York.—p. 497.  
Bulbocapnine in Treatment of Behavior Disorders Such as Occur in Chronic Epidemic Encephalitis. R. L. Jenkins, Chicago, and C. C. Rowley, Dixon, Ill.—p. 507.  
Ramón y Cajal and Physiology of Nervous System. A. Pi-Sunier and J. Pi-Sunier, Barcelona, Spain.—p. 521.  
Clinical Note on Word-Association Test. M. H. Erickson, Eloise, Mich.—p. 538.  
Relation of Persecutory Delusions to Functioning of Gastro-Intestinal Tract. F. Alexander, Chicago, and W. C. Menninger, Topeka, Kan.—p. 541.

## Journal of Pediatrics, St. Louis

9: 417-568 (Oct.) 1936

- \*Protamine Insulin in Children. Gladys L. Boyd, Toronto.—p. 417.  
Comparison of Antirachitic Effect of Irradiated Cholesterol and Cod Liver Oil. T. G. H. Drake, F. F. Tisdall and A. Brown, Toronto.—p. 421.  
Anemia of the New-Born: Report of Case, with Especial Reference to Etiology and Therapy. E. J. Hueneke, Minneapolis.—p. 427.  
Hematology and Pathology of Aplastic Anemia Occurring in Five Year Old Child. K. Kato and P. E. Steiner, Chicago.—p. 433.  
\*Influenzal Meningitis: Study of Its Clinical Characteristics Based on Analysis of Fifty-Four Cases from Records of St. Louis Children's Hospital. R. W. Huntington Jr. and Dorothy Wilkes-Weiss, St. Louis.—p. 449.  
Association of Otitis Media and Pneumonia with Onset of Influenzal Meningitis. R. W. Huntington Jr. and Dorothy Wilkes-Weiss, St. Louis.—p. 456.  
Treatment of Influenzal Meningitis with Immune Serum. Dorothy Wilkes-Weiss and R. W. Huntington Jr., St. Louis.—p. 462.  
Follow-Up Study of Ambulatory Children with Tuberculosis Infection. E. Wolff and S. Hurwitz, San Francisco.—p. 467.  
Hyperpyrexia of Sixteen Months' Duration of Unknown Etiology. H. M. Greenwald and J. Koota, Brooklyn.—p. 472.  
Isolated Peripheral Radial Nerve Paralysis in the New-Born. S. M. Abelson and J. Greengard, Chicago.—p. 483.  
Intestinal Obstruction Due to Meconium Ileus in a New-Born Infant. Case Report. Katharine Dodd, Nashville, Tenn.—p. 486.  
Comparative Study of Agglutinin Response After Pertussis Vaccination with Sauer Vaccine and with Toxin Vaccine and in Untreated Clinical Pertussis. Lucy Mishulow, assisted by Isabelle Mowry and Ruth Orange, New York.—p. 492.  
Rheumatic Heart Disease in Childhood: Clinical and Postmortem Study of Seventy-Three Cases. S. Gibson and E. J. Denenholz, Chicago.—p. 505.

**Use of Insulin Protamine in Diabetic Children.**—Boyd used insulin protamine in the treatment of twenty-five diabetic children. The usual procedure has been to observe the patient in the hospital with alternating control periods on insulin hydrochloride with those on insulin protamine. In none of the children studied was control impossible with ordinary insulin, but in some this was accomplished only with four doses of insulin a day, one before each meal and one at midnight. With insulin protamine alone or combined with ordinary insulin, equally good if not better results were achieved with two doses a day. The morning glycosuria has been well controlled if the insulin protamine is administered by the clock, 8 a. m. and 8 p. m., rather than at mealtime. Substitution of equal doses of insulin protamine for ordinary insulin, even if given by the clock, may permit some glycosuria for a couple of days, which completely disappears without any further adjustment. Reactions occur, but they are less severe and less frequent than hypoglycemia. This may be because of the more gradual fall of the blood sugar that occurs. Blood sugar estimations appear to be more urgent in the patient who is glycosuric with insulin retard than with ordinary insulin. Protracted ill feeling, such as tiredness and weakness, due to hypoglycemia is more common and is sometimes sufficiently severe to make the patient desire a return to the old insulin. This fatigue may be overcome by the needed reduction of the dose. The well adjusted patients, on the other hand, speak of increased well being and particularly about the new restfulness or peacefulness of their sleep. So far, no local reaction has been observed as the result of the administration of insulin protamine, nor has any general protein reaction occurred. Insulin protamine acts so slowly that it is contraindicated when quick action is desirable, such as in coma, when better results are obtained with ordinary insulin. Likewise in preoperative cases it should not be given, even if the patient is taking it and is being well controlled by it under ordinary circumstances.

**Influenzal Meningitis.**—Huntington and Wilkes-Weiss analyze fifty-four cases of influenzal meningitis from the St. Louis Children's Hospital and 500 cases collected from the literature. Only sixteen of the fifty-four patients were females. Only twelve of the patients were more than 2 years of age, while, of the 500 patients, 127 were more than 2 years old. In the group of fifty-four cases there were three recoveries. In the larger series there were thirty-five recoveries, twenty-six of which occurred in patients more than 2 years of age. According to the prevailing concept, influenzal meningitis is usually "primary." However, in ten cases it seemed clear that the onset of meningitis was preceded by otitis or pneumonia, and in some additional instances there were other features of interest in the recent history. In the fifty-one fatal cases the average time elapsing from first symptoms of severe illness to

death was approximately fourteen days. The longest duration in any of the authors' fatal cases was thirty-four days, and in this instance serum treatment may have prolonged the course. However, another patient, who received no serum, lived for twenty-two days after the onset of cerebral symptoms. In purulent intracranial infection in young children the conventional meningeal signs are often absent, and influenzal meningitis is no exception to this rule. One must be quick to suspect meningitis in any unexplained febrile illness of an infant. Extrameningeal lesions (abscess, pleural effusions, pericarditis, metastatic lesions, osteomyelitis, cellulitis, purpura) should be looked for. Patients with influenzal meningitis may have either a leukopenia or a leukocytosis. Haemophilus influenzae was found on one or more cultures in sixteen of twenty-four blood cultures. In the case of osteomyelitis of the tibia and in the cases of abscess of the extremities and of pericarditis, pure cultures of Haemophilus influenzae were obtained from these lesions. Definite evidence of cerebral block was observed during life in one patient and at necropsy in another. A third patient showed a pressure cone at necropsy. In most instances the spinal fluid leukocyte counts were between two and ten thousand, with a high percentage of polymorphonuclears. The highest count recorded in the series was 294,000, with 97 per cent polymorphonuclears. Stained smears of the first spinal fluid sample revealed gram-negative bacilli in all but twelve cases. In two of these twelve the first spinal fluid specimen was entirely normal but the second showed organisms on direct smear. Cultures were made in fifty-three of the fifty-four cases, and Haemophilus influenzae was eventually demonstrated in all of them, although first cultures were negative in two. The diagnosis of influenzal meningitis should be confirmed by culture of the spinal fluid in every instance. The diseases most likely to be confused with influenzal meningitis are meningococcal meningitis, other forms of purulent meningitis and tuberculous meningitis. In practically all instances, bacteriologic examination of the spinal fluid is necessary to settle the diagnosis.

## Journal of Pharmacology &amp; Exper. Therap., Baltimore

58: 119-198 (Oct.) 1936

- Studies on Barbiturates: XVII. Effect of Prolonged Chloroform Anesthesia on Duration of Action of Barbiturates. T. Koppányi, J. M. Dille and C. R. Linegar, Washington, D. C.—p. 119.  
Id.: XVIII. Analysis of Peripheral Action of Barbiturates. C. R. Linegar, J. M. Dille and T. Koppányi, Washington, D. C.—p. 128.  
Influence of Diallylmalonylurea on Metabolic Response of Cat to Diminution of Choline and Allied Compounds. R. Hunt and R. R. Renshaw, Boston and New York.—p. 140.  
Bacteriostatic Action of Certain Furan Derivatives. N. M. Phatak and C. D. Leake, San Francisco.—p. 155.  
Studies of Phenanthrene Derivatives: VII. Comparison of Analogous Phenanthrene and Dibenzofuran Derivatives. N. B. Eddy, Ann Arbor, Mich.—p. 159.  
Anesthetic Properties of Tetrahydrofuran. R. W. Stoughton and B. H. Robbins, Nashville, Tenn.—p. 171.  
Toxicity and Local Anesthetic Activity of Alkyl Esters of 2-Furoic Acid. N. M. Phatak and G. A. Emerson, San Francisco.—p. 174.  
Barbiturate-Strychnine Antagonism in Spinal Cat: Quantitative Study. E. L. Porter and E. L. Allamon, Galveston, Texas.—p. 178.  
Effects of Sodium Bicarbonate on Antipyretic Action and Toxicity of Acetanilid. P. K. Smith, New Haven, Conn.—p. 192.

## Journal of Thoracic Surgery, St. Louis

6: 1-124 (Oct.) 1936

- Muscular Coat of Esophagus and Its Defects. W. Lerche, Cable, Wis.—p. 1.  
Diagnosis and Treatment of Benign Ulcers of Esophagus: Case Report. H. R. Decker, Pittsburgh.—p. 20.  
\*Surgical Management of Congenital Atresia of Esophagus with Tracheo-Esophageal Fistula: Report of Two Cases. N. L. Leven, St. Paul.—p. 30.  
Sterilization of Air in Operating Room by Special Bactericidal Radiant Energy: Results of Its Use in Extrapleural Thoracoplasties. D. Hart, Durham, N. C.—p. 45.  
Pulmonary Alveolar Epithelium: Round Table Conference. C. C. Macklin, London, Ont.—p. 82.  
Mediastinal Lipomas. R. M. Walker, Wolverhampton, England.—p. 89.  
Intrathoracic Cystic Lymphangioma. G. F. Skinner and M. E. Hobbs, St. John, N. B.—p. 98.  
Unusual Complications Following Closed Intrapleural Pneumolysis: Report of Two Patients. J. H. Forsee, Denver.—p. 108.

**Congenital Atresia of Esophagus.**—In treating cases of congenital atresia of the esophagus with tracheo-esophageal fistula, Leven has carried out a procedure that attacks the fistula indirectly. The operation is done under local anesthesia. The abdomen is opened through an upper left rectus incision,

which extends up to the rib margin. The stomach is gradually retracted and packed off until the cardiac end is reached. By means of blunt dissection with a curved forceps, the subdiaphragmatic esophagus and the cardiac end of the stomach are mobilized. A rubber tissue drain is passed under the mobilized esophagus. By blunt dissection a centimeter of the mediastinal esophagus can be pulled into the abdominal cavity. By depressing the abdominal wall and exerting moderate traction on the drain, one can bring the cardiac end of the esophagus and stomach up into the wound. Two mattress sutures of chromic catgut bring the peritoneum and the rectus sheath under the exteriorized cardiac end of the stomach and the esophagus. A multiple purse string type of gastrostomy is then made in the stomach distal to the exteriorized portion. The upper and lower ends of the wound are closed with mattress sutures through the muscle and peritoneum. The skin is closed with vertical mattress sutures tied over rubber tubing. A soft rubber catheter is placed under the exteriorized segment, and the ends are fastened to the abdominal wall. An angulation is thus formed at the cardia and proximal to the gastrostomy, which will effectually prevent regurgitation of gastric contents into the lungs so that an adequate diet can be fed through the gastrostomy tube immediately. Because of leakage about the gastrostomy tube and perforations that occur in the exteriorized segment of the stomach and the esophagus, it is advisable to cut across this portion of the stomach in from two to three weeks and reconstruct the gastrostomy. A cervical esophagostomy would be done as the second stage procedure, and at a distant future date an antethoracic esophagoplasty could be carried out to establish continuity of the gastro-intestinal tract.

### Kansas Medical Society Journal, Topeka

37: 397-440 (Oct.) 1936

- \*The Problem of Childhood Tuberculosis. D. N. Medearis, Kansas City.—p. 397.
- Acute Otitis Media. H. L. Kirkpatrick, Topeka.—p. 401.
- Local Anesthesia in Reduction of Fractures. C. Romhold, Wichita.—p. 403.
- Ureteral Pain. H. E. Carlson, Kansas City.—p. 405.
- Roentgen Treatment of Plantar Warts. H. Klapproth, Halstead.—p. 406.
- Use and Abuse of Nonnarcotic Sedatives. R. M. Fellows, Osawatimie.—p. 408.

**Problem of Childhood Tuberculosis.**—Medearis suggests that the following be applied to routine pediatric practice: A wider use of the tuberculin test in diagnosis is advisable. Every child giving a history of home contact with tuberculosis should be so tested. Any child with inadequately explained fever or with a subnormal weight gain deserves a tuberculin test. A Mantoux test may well be made a routine procedure in every hospital admission of a pediatric patient. Every positive reactor should have a roentgenogram of the chest, and the interpretation of this plate should be made by a physician adequately trained in the roentgen diagnosis of tuberculosis. Every patient in whom a primary tuberculous complex has been diagnosed merits an adequate medical follow up with proper hygienic and dietary supervision and examinations at intervals frequent enough to assure the detection of any developing adult type or disseminating lesion early enough to establish effective special therapy.

### Kentucky Medical Journal, Bowling Green

34: 435-484 (Oct.) 1936

- President's Address: Early Warning of Impending Glaucoma? F. C. Thomas, Lexington.—p. 440.
- Method of Treating Chronic Ear Suppuration. G. C. Hall, Louisville.—p. 441.
- One Hundred Attempted Intracapsular Operations. C. D. Townes, Louisville.—p. 444.
- Streptococcal Throat. G. B. Brown Jr., Lexington.—p. 449.
- Early Diagnosis of Glaucoma Simplex. M. J. Stern, Lexington.—p. 451.
- Management and Treatment of Epidemics: Epidemiology of Meningococcal Meningitis, with Brief Reference to Treatment. F. W. Caudill, Louisville.—p. 453.
- Id.: Typhoid Fever. B. W. Smock, Louisville.—p. 459.
- Id.: Treatment and Management of Diphtheria. S. J. Brownstein, Louisville.—p. 462.
- The Plastic Surgeon Looks at a Nose. A. C. Pearlman, Louisville.—p. 467.
- Some Newer Methods Suggested for Diagnosis and Treatment of Bronchial Asthma. A. E. Cohen, Louisville.—p. 469.
- Wounds of the Heart. R. A. Griswold and E. M. Drissen, Louisville.—p. 471.
- Meningo-Encephalomyelitis (Poliomyelitis). V. E. Simpson, Louisville.—p. 476.

### Missouri State Medical Assn. Journal, St. Louis

33: 371-406 (Oct.) 1936

- Cardiotoxic Goiter. A. E. Hertzler, Halstead, Kan.—p. 371.
- Renal Physiology: Clinical Implications of Recent Developments. T. Findley Jr., St. Louis.—p. 373.
- Carcinoma of Dermoid Cyst of Ovary: Report of Cases. C. F. Kerr, Kansas City.—p. 377.
- New, Simple and Safe Method of Alleviation of Pain in Labor: Preliminary Report of Experience with New Analgesic Sigmodal. F. V. Emmert and S. Goldschmidt, St. Louis.—p. 378.
- Simple and Safe Home Obstetrics. E. Lissack, Concordia.—p. 384.
- Carbon Tetrachloride Poisoning: Report of Three Cases. E. S. Calhoun, Columbia.—p. 387.
- Further Aspects of Diathermy in Ophthalmology. G. H. Poos, St. Louis.—p. 388.
- Medical Economics. C. F. Vohs, St. Louis.—p. 392.

### New England Journal of Medicine, Boston

215: 647-692 (Oct. 8) 1936

- Nervous Disturbances of Vesical Sphincter. D. E. Denny-Brown, London, England.—p. 647.
- "Autoprostatectomy" Due to Tuberculosis: Case. T. N. Hepburn, Hartford, Conn.—p. 653.
- \*Uretero-Ureteral Anastomosis: Report of Case. C. H. Neuwanger, Waterbury, Conn.—p. 653.
- Immediate Effect of Preoperative Radiation in Cortical Tumors of Kidney. G. C. Prather and H. F. Friedman, Boston.—p. 655.
- Bladder Diverticula with Reimplantation of Ureter. C. N. Peters, Portland, Maine.—p. 663.
- Virus Problems in Diseases of Nervous System. Juanita Thompson, Watertown, Mass.—p. 664.
- Comparison of Accuracy in Diagnosis of Single and Multiple Valvular Disease of Heart. W. P. Thompson and S. A. Levine, Boston.—p. 670.

**Uretero-Ureteral Anastomosis.**—Neuwanger devised a technic of transplanting the ureter which consists of cutting the ureter obliquely and placing a black silk stitch in the tip of the ureter; both strands are then threaded through a large straight needle and the transplantation is effected by passing the needle through the recipient tissue. This is followed in turn by the ligature and ureter. This method was found admirably adapted for repairing a cut ureter and for uretero-ureteral anastomosis. Following its use in thirty-two animals it was used on a clinical case, in which three months later intravenous urography showed the kidneys and ureter to be unchanged and an anastomosis functioning normally.

### New Jersey Medical Society Journal, Trenton

33: 551-608 (Oct.) 1936

- Consideration of Increased Temperature Variations in Infants and Children. L. Robbin, Newark.—p. 557.
- \*Acute Perforated Peptic Ulcer: Report of Fifty-Eight Cases. T. J. Summey, Moorestown.—p. 563.
- \*Trauma and Cancer. R. H. Fowler, Newark.—p. 568.
- Annual Report of the Medical Commission for Maternal Welfare of Essex County, New Jersey. B. A. Furman, Newark.—p. 570.
- Prenatal Care in Essex County. J. N. Pannullo, Newark.—p. 574.
- Some Statistics from the Hospital Committee. C. H. III, Newark.—p. 574.
- Newer Anesthetic Agents. E. A. Rovenstine, New York.—p. 575.
- Encephalography and Its Diagnostic Importance. I. Strauss, New York.—p. 577.
- Unusual Forms of Rheumatic Infection in Children. M. H. Bass, New York.—p. 578.
- Organized Medicine and Social Insurance. F. F. Borzell, Philadelphia.—p. 586.
- Bradycardia and Hypothermia at Onset of Acute Appendicitis. S. E. Moollen, New York.—p. 589.
- Arthritis and Its Treatment with Gold Salts. H. Oren, Park Ridge.—p. 591.
- Maternal Welfare—Article Number Nine: Toxemia of Pregnancy. A. B. Davis, Camden.—p. 592.

**Acute Perforated Peptic Ulcer.**—Summey limits his study to fifty-eight cases of acute perforations of the prepyloric and postpyloric regions of the gastro-intestinal tract. The youngest patient in the group was a boy of 18 and the oldest was a man of 79. Most of the cases occurred in the third and fourth decades of life. About 94 per cent gave a definite history of indigestion varying in length from one week to thirty years. The symptoms in the majority of the cases were fairly typical in those admitted within the first twelve hours after perforation with the exception of two, in which there was no rigidity and the peristalsis was normal. Only three gastro-enterostomies were performed, as the author feels that the operation for acute perforation of gastric or duodenal ulcer should be limited to a simple closure in practically all cases. By so doing the mor-

tality will be lowered and one will have time later on for a thorough investigation with the aid of a gastro-enterologist and a roentgenologist to determine whether or not more surgery is required. The operative mortality of the fifty-eight patients operated on was 20.6 per cent. The mortality rate was in direct ratio to the time interval between perforation and operation. The causes of death in the patients operated on were peritonitis, postoperative shock, intestinal obstruction, pneumonia and hemorrhage from second ulcer on the posterior wall of the duodenum. Spinal anesthesia is the ideal anesthetic if the patient has reacted from the initial shock, as patients usually do a few hours after the onset. It permits perfect relaxation, enables one to work quickly and smoothly, and makes aspiration of the soiled peritoneal cavity easy. Drainage is not indicated unless there is marked soiling of the peritoneum of a duration of more than twelve hours. Before the patient leaves the table, he is given 50 cc. of a 50 per cent solution of dextrose intravenously if required, and on his return to bed the Trendelenburg position is maintained for six hours in those cases in which spinal anesthesia has been used. The fluid balance is maintained for the next two or three days by the use of continuous venoclysis of a 10 per cent dextrose solution or by hypodermoclysis of physiologic solution of sodium chloride. The stomach is drained by suction until the pylorus becomes patent. Nothing is given by mouth for twenty-four hours. At the end of the second day the patient is given water freely. On the third day a Sippy diet is prescribed and increased until the patient takes the full Sippy regimen at the end of one week. The majority of the patients who have maintained the prescribed diet have done well; 20 per cent of them, however, still complain of some form of indigestion even though adhering to a definite ulcer regimen.

**Trauma and Cancer.**—Fowler believes that alleged "traumatic tumors" would disappear from the literature if the so-called facts given in support of them were analyzed critically in the light of inquiry under present strict criteria. One of these criteria is the great probability of coincidence. Bruises and minor wounds are so common that almost every tumor victim will be able to think back and try to blame such an occurrence. An injury sustained in a potential tumor area, as in the breast, for example, is more likely to intensify subjective symptoms and to direct attention to a heretofore unsuspected tumor. This psychologic principle is termed by Ewing "traumatic determination." One may accept aggravation of a tumor only when the injury introduces into the disease significant, harmful effects that do not occur normally. The idea that injury accelerates tumor cell growth is not supported by clinical and experimental data. Trauma may cause metastases only in advanced stages, and then it does not alter the course of the disease.

### Southern Surgeon, Atlanta, Ga.

5: 331-406 (Oct.) 1936

Surgical Treatment of Encapsulated Intrathoracic Tumors: Report of Two Cases. J. A. Moore, Asheville, N. C.—p. 331.

\*Treatment of Acute Head Injuries. C. O. Bates, Greenville, S. C.—p. 343.

New Method and End Results in Treatment of Carcinoma of Stomach and Rectum by Surgical Diathermy (Electrical Coagulation). A. A. Strauss, S. F. Strauss and H. A. Strauss, Chicago.—p. 348.

Fractures of Patella. R. T. Hudson, Louisville, Ky.—p. 360.

\*Results of Superior Cervical Sympathectomy in Angina Pectoris. H. H. Kerr, Washington, D. C.—p. 365.

Allergic Reaction Following Transfusion: Report of Fatal Case. J. D. Hancock, Louisville, Ky.—p. 373.

Riedel's Thyroiditis: Suggestion as to Etiology and Surgical Management. R. B. McKnight, Charlotte, N. C.—p. 375.

Lesions of Breast. J. W. Tankersley, Greensboro, N. C.—p. 384.

Complications and End Results Associated with Injection Treatment for Hernia. C. O. Rice and L. M. Larson, Minneapolis.—p. 390.

**Treatment of Acute Head Injuries.**—Bates believes that lacerated wounds of the scalp should all be treated as infected wounds. The wound should be sutured loosely and drained. In those cases in which tight sutures are necessary to control hemorrhage the suture should be removed within forty-eight hours. The stab wounds inflicted with such instruments as ice picks should be considered potentially dangerous. The author has seen cases in which the pick penetrated the brain with no evidence of paralysis or any manifestation of injury

to the central nervous system. All wounds of the head in which there is evidence of soil contamination should receive the prophylactic dose of tetanus antitoxin, because tetanus following wounds of the head is more likely to be fatal. A craniocerebral injury is the most serious injury of the head. The attending nurse should understand the psychology underlying the recovery from head trauma. An injury to the brain leaves for a time a sick mind capable of running the gamut of imagination. Because of the various degrees of severity, the treatment of craniocerebral injuries cannot be standardized. An important point in the diagnosis of extradural hemorrhage is a lucid interval between the initial and subsequent loss of consciousness. In craniocerebral injuries, increased intracranial pressure is always due to hemorrhage or edema. The head injury in which no fracture is demonstrable should be thought of as a "black eye of the brain." The concussion cases usually clear up within a few hours or few days and the only treatment necessary is rest. In the more severe cases the surgeon should determine how completely nature is compensating for the increased intracranial pressure. Space compensation is the principal function of the cerebrospinal fluid. In patients with fracture of the skull and increased intracranial pressure a most careful and persistent study should be made. The treatment of shock is the first consideration with few exceptions and must be brought promptly under control. An emergency dressing must be applied to head wounds, but no wound repairs should be done that will further shock the patient. Undoubtedly the most efficient treatment in acute craniocerebral injuries with or without increase in intracranial pressure is rest. Those patients who show evidence of extradural hemorrhage with rapid increase in pressure should have immediate operation with ligation of bleeding vessels. The cases of severe trauma to the brain with increasing intracranial pressure should be treated with rest, dehydration, lumbar puncture and decompression. Under no circumstances should roentgenograms of the head be made while the patient is still suffering from shock. Dehydration can best be accomplished by limiting the intake of fluids to 600 cc. in twenty-four hours, by administering hypertonic dextrose solution and by giving magnesium sulfate. Lumbar puncture should never be used during the period of shock or to relieve pressure due to subdural or extradural hemorrhage. When rest and dehydration do not relieve the symptoms of increased intracranial pressure, lumbar puncture should be done. Its repetition should be determined by the results. The brain cannot be subjected to pressure that interferes with cerebral circulation for a considerable time without causing cerebral degeneration or death.

**Results of Sympathectomy in Angina Pectoris.**—Kerr performed superior cervical ganglionectomy in thirty cases of angina pectoris. In eighteen cases only the left superior cervical ganglion was removed because the pain was confined to the left side. In eleven a bilateral superior cervical ganglionectomy was done, as the pain was referred to both sides. In one case the distribution of pain was to the right side alone, and in this case only the right superior cervical ganglion was ablated. Of these thirty patients, two died while in the hospital, one immediately after operation and one five days post-operatively. Of the remaining twenty-eight, complete cessation of attacks of pain following exertion, eating or excitement was obtained in fourteen, stimuli that had previously produced characteristic attacks. Ten of the other fourteen patients obtained 75 per cent relief. In these cases a lesser degree of pain in the precordium was caused by exertion, eating or excitement. An occasional dose of glyceryl trinitrate was taken, but the patients were able to resume their previous life or occupation at a lesser tempo. Only slight relief, estimated at 25 per cent, resulted from operation in three cases. Former stimuli continued to produce pain of a lesser degree, but they were unable to return to work and had occasion to use the nitrites more or less continuously. One patient obtained little or no relief. Congestive heart failure was present when operation was performed. He was suffering severely and should not have been operated on. He died a cardiac death three months after operation. The ultimate outcome of superior cervical sympathectomy in angina pectoris depends on the underlying cardiac disease.

## FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

## British Medical Journal, London

2: 657-698 (Oct. 3) 1936

- \*Pathologic Changes in Bones and Joints Induced by Injury. J. F. Brailsford.—p. 657.  
Supracondylar Fracture of Elbow. N. Dunn.—p. 663.  
Fractures of Head of Radius and Capitellum Including External Condylar Fractures of Childhood. St. J. D. Buxton.—p. 665.  
Fractures of Internal Epicondyle of Humerus. S. L. Higgs.—p. 666.  
Fractures of Olecranon. G. Perkins.—p. 668.  
Plastic Operations for Hydronephrosis. H. Bailey.—p. 669.  
X-Ray Therapy in Carcinoma of Lung. J. S. Fulton.—p. 671.

**Changes in Bones Induced by Injury.**—Brailsford urges serial roentgen studies in cases of injury to bones and joints, as they will show the stage of healing, the time when the limb can be subjected to any of its normal stresses and strains, the ultimate fate of the graft and extensive osteoporosis of the living bone unless its vascularity has been impaired. Wiring and plating will give good apposition of the fragments and union, but as long as the metal is retained the bone will not completely recover its normal strength and elasticity. Injury to the surface of a bone may be associated with the formation of a hematoma, which will not be revealed by a roentgenogram in the early stages. Some hematomas are prone to calcification in which subsequent ossification may occur. Injury to cancellous bone may not be sufficient to cause a breach of continuity of the surface of the bone but may yet lead to a localized absorption of the damaged trabeculae and produce a cystlike appearance. In some cases in which the injury has been followed by effusion into the joint it may be possible by comparative examination of roentgenograms of both joints to recognize an increase in the joint space on the affected side. In severe injuries, such appearances as pointing of the articular margins and osteophytic development around them, the formation of loose bodies in the joint, eburnation and erosion of the bony surfaces which have been brought into contact may be detected—in fact, all the degenerative changes associated with the term osteo-arthritis. Once degenerative changes have been indicated in a joint, serial roentgen examinations will show a slow progression of the lesion with gradual limitation of the range of movement due to destruction of the articular surfaces: but bony ankylosis never occurs unless induced by surgical resection of the articular surface and close approximation of the bared bony surfaces. If the injured joint is devoid of normal trophic influences, normal regeneration appears to be checked or abolished and the joint surfaces with the underlying bones are slowly and painlessly worn away, the liberated calcium often appearing as an amorphous deposit. These changes are frequently associated with effusion into the joint and signs of edema in the neighboring tissues. Injury to an intervertebral disk may not be apparent for several months after trauma. It may then be indicated by diminution of an intervertebral space and lipping of the adjacent margins of the vertebral bodies, and perhaps partial localized ossification of the anterior common ligament. The bones of immobilized limbs show a gradual and somewhat irregular decalcification even of those bones which were not involved by the injury. Often marked changes not only in the calcium content but in the cancellous and compact structure of the bone may be seen. Many cases of acute-septic abscess, tuberculous or gummas of bone present clinical evidence of a primary septic, tuberculous or syphilitic focus apart from the bone lesion, which often appears to have originated at the site of a definite injury. The statistics of the German army and navy show that 1 in 15,000 injuries is followed by malignant changes.

## Medical Journal of Australia, Sydney

2: 347-380 (Sept. 12) 1936

- \*Some Observations on Relation Between Clinical Types of Diphtheria and Cultural Types of *Corynebacterium Diphtheriae*. Phyllis M. Anderson, N. E. Goldsworthy and Hugh K. Ward.—p. 350.  
Report on Gastric Analysis and Bacteriology in Cases of Rheumatoid Arthritis, Osteo-Arthritis, Spondylitis and Fibrositis. L. J. A. Parr and Eva A. Shipton.—p. 354.

**Clinical Types of Diphtheria and Types of *Corynebacterium Diphtheriae*.**—The studies of Anderson and her associates of 184 cases of the grave type of *Corynebacterium*

*diphtheriae* indicates that it is widely distributed in Sydney, and that, as in Europe, this type is apt to cause a more severe form of diphtheria than the mild type. The mild type undoubtedly can give rise to malignant diphtheria, but in this series of cases the grave type caused nearly seven times as many malignant infections as the mild. This fact, and the reports of malignant diphtheria coming from the country districts, suggest that the grave type is prevalent throughout the state. This highly fatal form of the disease is generally associated with the grave (or intermediate) form of the organism, and the probabilities are that malignant diphtheria always has been associated with this type. Like other workers, the authors have failed in their efforts to throw light on the pathogenesis of malignant diphtheria caused by the grave type and fall back on the obvious suggestion that sometimes, but by no means always, the grave organism is able either to form more toxin or to form it more quickly, so that the patient absorbs a fatal dose before antitoxin is administered. In one case in this series 100,000 units of antitoxin was given intravenously and intramuscularly within twenty-four hours of the first symptoms of illness, and yet the patient died. Malignant diphtheria occurred only once in this series in a child whose tonsils had been removed. The hemolytic streptococcus is not an important factor. That there is a form of diphtheria today, which, despite antitoxin, carries a death rate of more than 50 per cent is a convincing argument for pressing forward with prophylactic immunization. Diphtheria can occur occasionally in a person who does not react to the Schick test, but the authors know of no case in which a subject not reacting to the Schick test has died of diphtheria.

## Tubercle, London

17: 529-576 (Sept.) 1936

- Papworth and After-Care Movement in England. P. Varrier-Jones.—p. 529.  
The Problem of Postsanatorium Training in General, Illustrated by Practical Solution in Switzerland. E. Bachmann.—p. 532.  
Capacity for Work in Pulmonary Tuberculosis. M. Davidson.—p. 538.  
Id. L. B. Stott.—p. 543.  
Disease and Work. Von Weizsaecker.—p. 547.  
Determination of Artificial Pneumothorax Containing Small Quantity of Gas. E. Schill.—p. 549.  
Bilateral Pneumothorax and Pregnancy. E. Schill.—p. 551.

## Japanese Journal of Obstetrics &amp; Gynecology, Kyoto

19: 429-506 (Sept.) 1936

- Experimental Study on Effect of X-Ray to Heart. S. Ajisaka.—p. 430.  
Experimental Study on Changes of Fowl Organs by O-Amido-Azo-Toluol. S. Aoji.—p. 457.  
Fetal Kidney in Relation to Disease of Maternal Kidney. S. Tsuda.—p. 467.  
Study of Vital Staining of Fetal Kidney. S. Tsuda.—p. 470.  
Subsequent State of Health of Patients of Eclampsia. S. Tsuda.—p. 473.  
Instance of Chorio-Epithelioma Malignum with Cardinal Symptom of Intraperitoneal Bleeding and Metastasis in Gingiva. K. Irube and T. Ogura.—p. 476.  
\*Instance of Hemangio-Endothelioma Intravasculare of Ovary, Which Ruptured by Pedicle Torsion. A. Fujii.—p. 481.  
Fetus of Congenital Cystic Kidney. H. Yamamura and K. Ito.—p. 485.  
Instance of Chorio-Epithelioma Cured Naturally. H. Fujimori and K. Kobayashi.—p. 489.  
Statistic Study of Delivery by Forceps. R. Nomura.—p. 494.  
Statistic Observation of Placenta Praevia. Y. Matsubara.—p. 500.

**Intravascular Hemangio-Endothelioma of Ovary with Torsion of Pedicle.**—Fujii reports a case of intravascular endothelioma of the ovary, which showed sarcomatous degeneration and finally ruptured owing to congestion and torsion of the pedicle. On laparotomy, the pedicle was contorted three times, the wall of the tumor had been broken and a brownish black substance, like putrid flesh, filled the abdominal cavity with a large quantity of blood. The tumor was cut off from the uterine cornu and the contents were removed. The abdominal cavity and vagina were cleansed with ether. After 20 cc. of ether was injected into the cavity, the abdomen was sutured. Recovery was uneventful and the patient left the hospital within three weeks. She is now healthy, with no sign of recurrence one year after operation. Histologically, small vacuoles were found in the centers of the cell groups of the tumor. There were erythrocytes in these vacuoles. Congestion and hemorrhage were recognized in places in the tumor and seemed to originate from stagnation of blood brought about by torsion of the pedicle.

## Presse Médicale, Paris

44: 1537-1560 (Oct. 3) 1936

Refusal Phenomenon in Irreversible Dystrophies. G. Mouriquand.—p. 1537.

\*Diagnosis of Hodgkin's Disease by Ganglionic Puncture. P. Emile-Weil, P. Isch-Wall and Mme. Suzanne Perlès.—p. 1540.  
Collective Oxygen Therapy. L. Dautrebande, E. Philippot, E. Dumoulin and F. Nogarède.—p. 1543.

**Diagnosis of Hodgkin's Disease.**—Emile-Weil and his collaborators studied the tissues obtained by puncturing the glands in Hodgkin's disease. The so-called Sternberg cells were the most characteristic cells observed in these specimens. There was also extreme cellular polymorphism. Several types of adenograms are described. One of these is characterized by monocytic hyperplasia: increase in the number of typical monocytes and absence of Sternberg cells. Another type is that in which eosinophil cells predominate. If the percentage of these cells exceeds all others, one can believe that lympho-granulomatous tissue is being formed. Also a type is described in which there is massive infiltration with polymorphonuclear cells. Finally there is a type of adenogram of fibrous nature that occurs in an advanced phase of the disease. The authors conclude that ganglionic puncture is as reliable as biopsy in demonstrating the elements necessary for the diagnosis of malignant lymphogranulomatosis. Furthermore, when well studied and interpreted it offers a practical advantage over biopsy. It enables repeated examinations to be made and thus to follow the evolution of the disease in a way that is impossible when biopsy is employed.

## Revue de Chirurgie, Paris

55: 555-633 (Oct.) 1936

\*Influence of Bloody Effusions on Evolution of Infected Wounds. G. M. Gurewitsch and M. W. Rewo.—p. 555.

Treatment of Suppurative Meningitis. O. Zeller.—p. 567.

Abdominal Contusions with Multiple Lesions of Mesentery and Mesosigmoid. G. Mandillon and J. Poinot.—p. 578.

**Bloody Effusions and Infected Wounds.**—According to Gurewitsch and Rewo, the conventional view that fresh bleeding into the tissues makes the involved area a site of predilection for infection needs review. In order to approach this problem in an experimental manner, they made a series of seven experiments on rabbits. The abdominal wall was shaved and was washed with alcohol. The following day an operation was performed with the object of producing a hematoma. In this series of seven large hematomas they failed to get any suppuration, even following the intravenous injection of various living cultures of bacteria. Thus, in the experiment they not only failed to demonstrate the susceptibility of a hematoma, but, in fact, the hematomas showed a certain degree of resistance against infection. They believe, therefore, that fresh hematomas actually increase the local resistance of tissues.

## Schweizerische medizinische Wochenschrift, Basel

66: 1069-1104 (Nov. 7) 1936. Partial Index

\*Transitory Pulmonary Infiltrates with Eosinophilia. W. Löffler.—p. 1069.

Central Regulation of Circulation and Respiration. W. R. Hess.—p. 1078.

Roentgenologic Study of Pulmonary Hilus. M. O. Mistal.—p. 1081.

Catarrh of the Upper Respiratory Passages and Its Treatment. E. Curchod.—p. 1084.

\*Use of Vitamin C in Treatment of Bronchial Asthma. A. Epstein.—p. 1087.

Spontaneous Pneumothorax Contralateral to Artificial Pneumothorax. J. Stephani.—p. 1088.

**Transitory Pulmonary Infiltrates with Eosinophilia.**—Löffler directs attention to fleeting pulmonary infiltrates that are accompanied by eosinophilia. This complex of symptoms apparently may develop under various conditions. The author has observed fifty-one cases, some of which he describes. The process is benign, but this contrast between the benign character of the disorder and the often alarming objective symptoms makes the process important not only from the theoretical but also from the practical point of view. The author gives his attention first to the chief symptom, the roentgen shadow. Localization, extension and structure of the shadow vary. Its main characteristic is its transitory character; it forms in a

comparatively short time and disappears again just as rapidly. A single roentgenoscopy does not permit a definite diagnosis, but it is necessary to repeat it, if possible, every second day. The second important symptom is the eosinophilia of the blood. It varies from mild to extremely severe degrees. There is no parallelism between the size of the pulmonary infiltrate and the severity of the accompanying eosinophilia. The latter may be in its severest stage at a time when the pulmonary shadow is already disappearing. The disturbances in the general condition are as a rule slight. In many cases there is a complaint of general fatigue. The acoustic symptoms are usually slight. Coughing is complained of in many cases and it may be accompanied by piercing pains. Expectoration is either entirely absent or it is slight. In discussing the pathogenesis, the author expresses the opinion that the infiltrates are the manifestations of extremely benign tuberculous processes; that is, they indicate an extremely favorable allergic condition.

**Vitamin C in Treatment of Bronchial Asthma.**—Epstein reports the results he obtained in the course of one year with the systematic administration of vitamin C as an adjuvant in the treatment of bronchial asthma. In nearly all the patients with asthma who were treated with gold salts, intravenous injections of 100 mg. of a vitamin C preparation were intercalated between the injections of the gold salt. After this combination therapy was instituted, the cutaneous or oral complications attributable to the gold salts no longer appeared. The author considers this extremely important, for, in view of this effect of vitamin C, its use is justified not only in the treatment of patients with asthma but also in tuberculous patients who receive gold therapy. In patients with bronchial asthma who gave a positive Pirquet reaction, the author tried treatment with tuberculin and vitamin C. Here too the results were extremely favorable. The author reaches the conclusion that the use of vitamin C as an adjuvant is justified in the treatment of asthma.

## Giornale di Batteriologia e Immunologia, Turin

17: 433-592 (Oct.) 1936. Partial Index

Bacterial Pleomorphism in Reference to Bacillus Typhi. I. L. Kritschewski and P. L. Rubinstein.—p. 433.

Use of Bacteriologic Filters. P. E. Perini.—p. 447.

Experimental Immunization of Man Against Botulism. I. Velicanov.—p. 451.

\*Simplified Technic of Henry's Melanoflocculation Reaction by Using Laked Blood. A. Spanedda.—p. 467.

\*Behavior of Certain Seroreactions for Syphilis on Blood Serum of Non-syphilitic Persons Inoculated with Malaria. Ester Ferrando.—p. 502.

**Simplified Technic of Henry's Melanoflocculation.**—Spanedda reports a modification of Henry's melanoflocculation for malaria. Laked blood is used instead of blood serum. The technic is as follows: 1. A melanin suspension is prepared from fresh beef choroid. The suspension is prepared according to the usual technic and is left in the icebox for at least one month before using. 2. Two or three drops of blood from the finger of a patient with a fasting stomach is dropped into a pipet that contains 1 cc. of distilled water. The test is made within twenty-four hours after the withdrawal of the blood, care being taken that the blood solution is clear and not inactive. At the time the test is made, two alkaline solutions are prepared by adding 0.25 cc. of a solution of hundredth normal sodium hydroxide to 100 cc. of distilled water for the one, and to 100 cc. of a 3 per thousand solution of sodium chloride for the other. With the two solutions two 1:10 solutions of melanin are made from the melanin mother suspension. The latter is shaken before being used. Five identical pipets are prepared. Four drops of laked blood is placed in each of the first four pipets. Then eight drops of the solution of melanin in distilled water is added to the first pipet, eight drops of the solution of melanin in sodium chloride solution to the second, eight drops of distilled water to the third and eight drops of a 3 per thousand solution of sodium chloride to the fourth. To the fifth pipet, which contains no laked blood, eight drops of the solution of melanin in distilled water and four drops of distilled water are added. The results of the test are read with the aid of an agglutinoscope two hours later if the pipets were left in a thermostat at 37 C., or twenty-four hours later if they were left at ambient temperature. The author tried the modified test in ninety-one cases. In eighty-four the presence of plasmodia

in the blood was evident. An intermediate reaction (between the atypical reaction caused by globulins and the typical one) took place in twenty-four serums. The test gave negative results in three serums and typical positive results in sixty-four. The results were not related to the fact that the blood was taken during the febrile attack or in the afebrile stage. The only exceptions to this rule were the three cases previously mentioned, in which the test gave negative results, whereas plasmodia existed in the blood. In these cases the blood for the test had been obtained during the febrile stage. The author made the test by the modified technic as well as by the common methods in thirty serums in order to compare them. He found a perfect correlation in the results, whereas the modified technic is easier. He considers the technic dependable and of clinical value.

**Positive Wassermann Tests in Persons with Malaria.**—Ferrando says that the Wassermann test may give nonspecific results in malarial patients. She made the Wassermann, Müller and Sachs-Vitebsky tests with the blood serum of ten non-syphilitic patients in the course of benign tertian malaria and found that the Wassermann test can give positive results during the febrile attacks of therapeutic malaria but that it becomes negative by administering quinine to the patient. The Müller test gives sustained negative results all through the course of therapeutic malaria. The Sachs-Vitebsky test gives negative results in almost all cases.

### Rivista di Clinica Pediatrica, Florence

34: 961-1056 (Nov.) 1936

Staphylococcal Sepsis in Children: Cases. G. Salvoli and G. Mazzetti. —p. 961.

Galactogenic Functions of Placenta: Experiments. E. Messeri.—p. 972. Histology of Conjunctival Mucosa in Measles, Especially in Incubation Period. Anna Robles.—p. 991.

\*Pulmonary Syndrome from Malaria in Child: Case. A. Barcaglia.—p. 1011.

**Pulmonary Syndrome from Malaria.**—Barcaglia reports a case in which a child, aged 3 years, presented (coincidentally with febrile attacks of a tertian type) clinical signs of pseudo-lobe bronchopneumonia at the base of the left lung. The pulmonary syndrome completely disappeared in a few hours when fever left and reappeared with each new febrile attack. In the patient's blood, *Plasmodium vivax* was found. Antimalarial treatment resulted in complete recovery of the patient. The author reviews the literature on the pathogenesis of malarial pulmonary syndromes, previously reported. He believes that in his case an intense, intermittent and periodic congestion was produced in only one and the same pulmonary lobe. The pulmonary congestion was probably the manifestation of an anaphylactic reaction caused by the entrance of heterogenic proteins in the blood. The heterogenic proteins probably originated in a destruction of the erythrocytes or in products of the metabolism of *Plasmodium*. The author calls attention to the fact that *Plasmodium vivax* produces pulmonary syndromes which are similar to the grave pulmonary syndromes caused by *Plasmodium praecox* and *Plasmodium falciparum-quotidianum*.

### Annaes Paulistas de Medicina e Cirurgia, São Paulo

32: 317-415 (Oct.) 1936

\*Latent Jaundice: Diagnostic and Therapeutic Value. J. Mendonça Cortez.—p. 335.

Apoplexy of Uvula: Case. N. Penteado de Castro.—p. 353.

Diagnosis of Bronchiectasis. J. Ramos Jr.—p. 357.

**Latent Jaundice.**—According to Mendonça Cortez, normal bilirubinemia exists. The normal quantity of bilirubin in the blood varies between 2 and 3 mg. for each thousand cubic centimeters of blood. Jaundice appears when the quantity of bilirubin in the blood is more than 8 mg.; when it is between 3 and 8 mg. it indicates latent jaundice. The value of latent jaundice depends on the fact that it originates in hyperhemolysis (due to infections, intoxications and spleen disturbances) and in moderate liver insufficiency. When latent jaundice but not hyperhemolysis exists, it indicates moderate liver insufficiency and contraindicates the use of any drug with a detrimental action on the liver. The diagnosis of latent jaundice is made by determining the amount of bilirubin in the blood: it occurs in various pathologic conditions. It is found in all cases of

liver cirrhosis and in diabetes but not in normal pregnancy. It may be produced by administration of certain drugs (especially arsphenamine) and by certain anesthetics (especially chloroform and ether) and may develop in alcoholism, cardiac insufficiency, certain forms of anemia, during the crises of certain infections and from internal hemorrhages and cerebral hemorrhage. The symptom is of diagnostic or prognostic value. It indicates the advisability of administering certain drugs as well as the continuation of a given treatment or surgical intervention. Constitutional hyperbilirubinemia, hepatic temperament and familial cholemia are not pathologic but abnormal conditions. From a pharmacologic point of view these patients are in the same group as those suffering from moderate insufficiency of the liver.

### Fortschritte a. d. Gebiete der Röntgenstrahlen, Leipzig

54: 215-326 (Sept.) 1936. Partial Index

Roentgen Therapy of Prostatitis. J. Palugay.—p. 215.

New Bronchographic Results in Bronchiectasis. A. Kautzky.—p. 219.

Roentgenologic Diagnosis of Tracheal Tumors. Erika Ellinger.—p. 226.

Symptomatology of Honeycomb Lung. F. H. Weiss.—p. 230.

Contrast Filling of Basal Cisterna of Brain by Heavy Iodol. A. Schüller.

—p. 251.

\*Roentgen Treatment of Case of Progressive, Multiple Myositis Ossificans. M. Sgalitzer.—p. 304.

### Treatment of Progressive Multiple Ossifying Myositis.

—Sgalitzer reports two cases of progressive multiple ossifying myositis, one of which had been observed for fourteen years and the other one for two and a half years. The latter case, in which heat application and other therapeutic measures had failed, was treated by repeated roentgen irradiations with small doses and large fields over the regions of muscular rigidity, which precedes ossification of the muscular tissues. The author reasoned that the resorption-promoting action of roentgen rays might be beneficial. The roentgen irradiations were given with 170 kilovolts, from a focus skin distance of 35 cm. and through a filter consisting of 0.5 mm. of zinc and 1 mm. of aluminum. The dosage was 150 roentgens per field. The neck was irradiated from the front, and the right half of the thorax from the front and back. The lower portion of the thoracic vertebral column and the upper portion of the lumbar cervical column also were irradiated. Three weeks later an irradiation of the entire body was given, the anterior side of the body being irradiated for fifteen minutes from a distance of 1.5 meters. This total irradiation was repeated after a month. The field irradiations were repeated at intervals of three months. So far they have been given ten times. The condition, which had been progressive for over a year and produced severe limitation of movement, improved rapidly after the first series of irradiations. The stiffness and rigidity of the muscles diminished and mobility increased, so that only a small limitation of movement remained, owing to the ossification of muscular tissues prior to the roentgen irradiation.

### Klinische Wochenschrift, Berlin

15: 1465-1504 (Oct. 10) 1936. Partial Index

Question of Predisposition to Pneumococcal Diseases of Lung. H. Killian.—p. 1469.

Changes in Colloid Structure of Plasma of Patients with Liver Disease Following Stimulation of Head's Zone of Liver. B. Paul and P. von Végh.—p. 1471.

Quantitative Determination of Blood Diastase: Technic of Determination of Blood Diastase According to Ottenstein. F. Rennkamp and B. Schuler.—p. 1473.

Experiments on Bacterial Allergy: Comparative Examination of Skin and Serum Reaction. C. Engel and M. R. Vigliani.—p. 1477.

\*Serodiagnosis of Pemphigus. E. Urbach, S. Wolfram and R. Brandt.—p. 1479.

**Serodiagnosis of Pemphigus.**—Urbach and his associates point out that in former studies they tried to prove that the pemphigus group of disorders (pemphigus vulgaris, pemphigus vegetans and dermatitis herpetiformis Dühring) belong to the group of virus diseases. They cite animal experiments which point in this direction and, in order to produce further proof for the theory that the pemphigus group is caused by a virus, they tried to demonstrate in the blood serum of patients with pemphigus complement fixing antibodies against the supposed virus. They describe a complement fixation reaction which uses as antigen the extract of specifically infected and diseased

rabbit brains. They found this reaction positive in approximately 75 per cent of all patients with pemphigus and with dermatitis herpetiformis Duhring, whereas control serums gave a margin of error of about 4.5 per cent. In approximately 25 per cent of clinically proved cases of pemphigus and of dermatitis herpetiformis Duhring the complement fixation reaction was negative. If it remains constantly negative, it signifies an unfavorable prognosis, for it indicates that the immunity of the organism is weak. The positive seroreaction is a further proof that the pemphigus group is caused by a virus and that pemphigus vulgaris, pemphigus vegetans and dermatitis herpetiformis Duhring are of the same nature.

### Wiener Archiv für innere Medizin, Vienna

29: 161-320 (Oct. 30) 1936. Partial Index

- \*Clinical Aspects and Differential Diagnosis of Syphilitic Coronary Stenosis. O. Zimmermann-Meinzinger.—p. 161.
- Pathogenesis and Clinical Aspects of Gastric Ulcer. L. Jarno.—p. 201.
- Studies on Hypophyseal Hormones of Carbohydrate and Fat Metabolism in Diabetic Patients and in Hypophyseal Tumors. M. Taubenhaus.—p. 251.
- Changes in Biliary Cholesterol and in Biliary Acids in Some Hepatic Diseases. L. S. Lifschitz.—p. 259.
- Endocrine and Nervous Regulation of Blood Pressure During Standing Position and After Work. M. Schur.—p. 271.
- \*Presence in Cerebrospinal Fluid of Contra-Insular Hormone That Induces Hyperglycemia. W. Koch and P. Lehdorff.—p. 291.

**Syphilitic Coronary Stenosis.**—Zimmermann-Meinzinger bases his discussion of the differential diagnosis of syphilitic coronary stenosis on the clinical and necropsy observations in forty-two cases of mesaortitis. The necropsy revealed in twenty-two cases (slightly more than 50 per cent) a syphilitic coronary stenosis. The observations indicate the greater importance of the left than of the right coronary artery for a sufficient blood perfusion of the cardiac muscle. The anamneses revealed the diagnostic importance of the stenocardiac symptoms and of dyspnea, particularly of their simultaneous appearance, of their persistence and frequently of their progressive character. The author warns against the underestimation of certain neurotic traits that occur in these patients, such as constant unrest, anxiety or excitation, because a coronary stenosis frequently exists in these patients with mesaortitis. That the subjective difficulties are frequently of short duration and that fatalities occur occasionally in apparent health prove that a coronary stenosis may often exist for a long time without giving rise to complaints. With regard to the syphilitic factor the anamnesis was extremely unreliable, for it disclosed such a factor in only 25 per cent of the cases. Hypertension was present in a rather mild degree in only a few cases, whereas the majority of patients had normal or slightly reduced blood pressure values. A noticeable increase in blood pressure was repeatedly observed in patients with coronary stenosis, so that an increase in blood pressure cannot be cited as evidence against coronary stenosis. Failure of the action of nitrite was almost never observed, but later its efficacy became often considerably reduced or the effect was only of short duration. Strophanthin therapy frequently resulted in an increase of the anginous symptoms. Discussing the electrocardiographic aspects, the author states that in approximately 50 per cent of the patients with severe coronary stenoses the electrocardiogram taken during rest showed no pathologic changes whatever; at any rate, there were no signs indicating coronary insufficiency. The author stresses the importance of taking an electrocardiogram during an attack or at least in connection with a work test. However, he admits that even the work test may fail.

**Hyperglycemia Resulting from Injection of Cerebrospinal Fluid.**—Koch and Lehdorff review Kylin's studies on the effect of cerebrospinal fluid from normal persons and from patients with hypertension, eclampsia or diabetes mellitus on the blood sugar of rabbits. Then they describe their own investigations on this problem and show that their results differ slightly from those of Kylin. They found increased blood sugar values not only following the injection of cerebrospinal fluid from patients with hypertension but also after the injection of normal cerebrospinal fluid. To be sure, in the animals that had been given injections of cerebrospinal fluid from patients with hypertension the increase was slightly higher,

but the differences were so insignificant that they may be disregarded, and the authors are unable to corroborate Kylin's observation in this respect. However, they think that the behavior of the blood sugar of the rabbits following the injection of cerebrospinal fluid from patients with diabetes mellitus deserves attention, although it completely lacks regularity. They reason that in view of the severe regulatory disturbance of the carbohydrate metabolism, which exists in every case of diabetes mellitus, an excess as well as a deficiency of the contrainsular hormone is possible, the more so since a number of hormones of the anterior lobe of the hypophysis may exert their influence on the carbohydrate metabolism. At any rate the authors intend to continue their investigations on this problem. The cerebrospinal fluid of a patient with acromegaly resulted in an enormous increase in the blood sugar content of the test animals. Although this was to be expected, the authors admit that a single case does not justify definite conclusions. In surveying all their observations, they find that human cerebrospinal fluid usually contains a substance which induces hyperglycemia in rabbits.

### Polska Gazeta Lekarska, Lwów

15: 829-844 (Oct. 25) 1936

- \*Epileptic Attacks in Chorea. A. Gelbard.—p. 829.
- Clinical Value of Electrocardiographic Dorso-Anterior (Fourth) Derivation. L. Tochowicz.—p. 832.
- Physical Therapy in Disorders of Circulation. J. Misiński.—p. 834.

**Epileptic Attacks in Chorea.**—Gelbard reports two cases of epileptic attacks in chorea during pregnancy although no attacks had occurred before the manifestation of chorea. Epileptic attacks in chorea are not rare, but pregnancy as a cause of chorea with epileptic attacks is rare and of unknown etiology. The first patient was a woman, aged 23, who had become pregnant ten weeks previously. A week before the symptoms of chorea appeared she had two epileptic attacks, six or seven days apart and after extreme excitement. The attacks caused complete loss of consciousness with general convulsions. Before the attacks a cutaneous eruption appeared in spots around the shoulders and disappeared after they subsided. As the symptoms of chorea increased, the epileptic attacks diminished and finally stopped. She had never suffered from chorea before and had had a normal childbirth two years previously. Pregnancy was interrupted by curettage and she was greatly improved after two months and returned to work. In the second case, chorea minor, the disease had progressed for three years before she entered the hospital. Recently she suffered an epileptic attack with complete unconsciousness for several minutes. This was her first attack, though she had regular fainting spells during her menstrual periods. She was the only one of her people who was not strong and healthy. She left the hospital after four weeks and has shown signs of improvement since. Both these cases are typical hyperkinesic chorea. In the first case the epileptic attack was attributed to excitement. The second was a case of Sydenham's chorea.

### Geneesk. Tijdschr. v. Nederlandsch-Indië, Batavia

76: 2569-2632 (Oct. 13) 1936

- \*Tuberculous Burrowing Abscess in Diaphragm. M. Straub.—p. 2570.
- \*Formation and Destruction of Erythrocytes. F. M. Meyers.—p. 2577.
- Mineral Metabolism in Persons Living in the Tropics. W. Radsma, J. V. Klercks and J. W. R. Everse.—p. 2590.
- Snake Bite by *Doliophis Intestinalis*. E. Jacobson.—p. 2599.
- Roentgenologic Diagnosis, Free Fluid in Abdominal Cavity. L. W. van den Burg.—p. 2605.

**Tuberculous Burrowing Abscess in Diaphragm.**—Straub reports a case history with such an obscure course that the clinical diagnosis proved extremely difficult. The patient died and the postmortem examination clarified the main aspects of the case. Microscopic sections revealed that the peculiar burrowing abscess in the diaphragm developed from a mediastinal gland which was involved in the primary tuberculous process. A softened, caseated focus in this gland, directly adjacent to the highest point of the diaphragm, was the cause of the spreading in the diaphragm. As regards the tendency to spread in the muscle, this burrowing abscess resembles the psoas abscesses. The anatomic condition determined the spreading of the abscess in this case; the typical form made a good

drainage impossible. The author discusses some of the aspects of the case, which still remain obscure, and also the problem of the primary complex.

**Formation and Destruction of Erythrocytes.**—Meyers shows that the estimation of the number of reticulocytes in the blood is helpful in understanding the physiology of anemia. The hypothesis that all new erythrocytes appear in the peripheral circulation as reticulocytes, although not quite exact, makes it nevertheless possible to express the relation between the destruction of old and the production of new erythrocytes. In healthy persons the number of erythrocytes remains practically constant throughout life. This indicates the presence of a regulating mechanism between destruction and production. After discussing some of the factors that play a part in the formation of new blood, such as the presence of certain building materials, the oxygen tension of the blood in the bone marrow and the function of certain parts of the central nervous system, of hormones and of organs such as the spleen, the author points out that anemia develops as a result of a discrepancy between the destruction and production of blood. He takes up the various types of anemias. In five cases of anemia associated with hemolysis (increased values of indirect blood bilirubin) there was no relationship between the course of the bilirubin values and the fluctuations in the blood destruction. Consequently the blood destruction could not be alone responsible for the severe bilirubinemia, but it is likely that a disordered function of the liver did likewise play a part. A malarial infection may reduce the functional activity of the bone marrow by a direct toxin effect. If a large number of reticulocytes is found in anemia, it indicates that the formation of new blood is not deficient.

### Bibliotek for Læger, Copenhagen

128: 217-268 (Sept.) 1936

- \*Anatomopathologic Investigations in Three Patients Who Died During Attacks of Asthma Together with Lethal Case of "Secretory" Asthma. J. V. Jørgensen.—p. 217.  
Normal Count in Spinal Fluid. H. Jessen.—p. 267.

**Pathology in Fatal Cases of Asthma.**—In Jørgensen's first case there were extensive changes in the lymph nodes, regarded as allergic manifestations. In the next two cases death was due to or hastened by complications regarded as allergic, conglutination of the erythrocytes in the kidneys and especially in the lungs in the one, edema of the lungs in the other. Microscopic examination showed part of the bronchi contracted and dry, another part dilated and filled with mucus, with transition stages between the two types. These phenomena are believed to be best explained by a two-phase theory. In the fourth case, with the clinical course of a "secretory" asthma, an atypical form is represented, in which one phase completely dominates and there is no expression, or only a sporadic one, of the other phase. There was simple respiratory dyspnea without the characteristic asthma stamp. The clinical experience that epinephrine is indicated early in the asthma attack further supports the conception that the attacks occur in two phases; there is no theoretical basis for the use of epinephrine in the second phase, in which it may apparently even aggravate the condition.

### Hospitalstidende, Copenhagen

79: 981-1008 (Sept. 29) 1936

- \*Fluorine Intoxication in Cryolite Workers. K. Roholm.—p. 981.  
\*Treatment of Some Cases of Pellagra and Polyneuritis with Stomach Preparations: Preliminary Clinical-Therapeutic Report. S. Petri and O. Wanscher.—p. 1003.

**Fluorine Intoxication in Cryolite Workers.**—Roholm says that chronic resorptive fluorine intoxication differs clinically, roentgenologically and anatomopathologically from the known sclerosing diseases of the bones. Intoxication from fluorine results from inhalation of a daily dose of from about 0.2 to 0.35 mg. of fluorine per kilogram of body weight. Examination of sixty-eight workers on cryolite exposed to the dust showed that the majority were affected. The acute symptoms are loss of weight, nausea and vomiting; the chronic symptoms, functional dyspnea, pain of rheumatic character, stiffness and constipation. The workers soon become injured to the effects. In fifty-seven (85.8 per cent) of the workers there was sclerosis of the bones of the body, as described by

Flemming, Møller and Gudjonsson, especially of the spinal column, pelvis and ribs. In some cases the mobility in the spinal column and thorax was reduced. The general condition was not disturbed. Postmortem in two workers who died from intercurrent diseases revealed no organic changes definitely attributable to the intoxication. The bones weighed up to three times the normal and were chalky white, with extensive periosteal deposits and calcification of ligaments. The bony system contained an average of about sixty times the normal amount of fluorine. The fluorine content was increased in the lungs. Evidence indicates that, when the intake of fluorine ceases, the sclerotic bony tissue is replaced by normal tissue; the ligament calcifications seem to disappear incompletely. As fluorine is eliminated in the milk, mottled teeth in the children of women workers may result if lactation is continued long.

**Treatment of Pellagra and Polyneuritis.**—Petri and Wanscher say that, after oral administration of relatively small doses of human gastric juice and preparations of swine stomach for a relatively short time in five cases of pellagra and polyneuritis, most of the symptoms were influenced, with notable improvement in two cases in which there was marked disturbance, and the deficiency or absence of a certain specific property in the stomach of the patients becomes evident.

79: 1009-1080 (Oct. 6) 1936

- Studies on Fat Metabolism: II. Continued Investigations on Applicability of Hemolipochrit Method and on Physiology Together with Pathology of Hyperlipemia in Different Disturbances, Particularly in Idiopathic Steatorrheas (Sprue, Nontropical Sprue, Intestinal Infantism). B. Lawaetz and P. Vogt-Møller.—p. 1009.  
\*Idiopathic Steatorrhea (Gee-Thaysen's Disease): Three Cases. E. Mogensen.—p. 1032.  
Occult Hemorrhage as Indication for Early Exploratory Laparotomy. T. Jersild.—p. 1053.  
\*Cancer Cell as Ubiquitous Variety of Normal Tissue Cells. A. Fischer.—p. 1064.  
Proctalgia Fugax (Thaysen). K. Roholm.—p. 1071.

**Idiopathic Steatorrhea.**—Mogensen reports that in his first patient, a woman aged 27, nontropical sprue in unusually pure form developed in connection with pregnancy. The second patient, a man aged 74, had spent twenty years in the tropics and had sprue after fifteen years' stay in Natal; the case is regarded as one of nontropical sprue and is the first to be reported from Natal. In addition to the steatorrhea, hyperchromatic megalocytary anemia was the dominating symptom. Treatment with diet and with liver extract parenterally resulted in marked improvement and recovery from the anemia. In a woman, aged 38, with the history of tetany for many years, the tetany depended on idiopathic steatorrhea, originated at the age of 8. In this typical case the skin disturbances were more prominent than usual. The blood sugar curve was low after both intravenous and oral administration of dextrose, which agrees with Thaysen's conception that the low blood sugar curve is not due to deficient resorption of the dextrose.

**Cancer Cell as Variety of Normal Cells.**—Fischer says that the selection theory of the origin of cancer, formulated on the basis of his own and others' observations, is strongly supported by the result of experimental investigations here presented, which show that it is possible by repeated autogenic transplantations of normal tissue in young mice to produce carcinomas in a short time. There are believed to be normally in the different organs and tissues individual tissue cells which possess all the special properties of the cancer cells. Isomorphic cells, whether, for instance, liver cells or cells of the cutaneous epithelium, have all the characteristics of liver cells or cells of the cutaneous epithelium, respectively, but nevertheless differ from the average liver or epithelial cell by a special property. That such cells do not generally develop is assumed to depend on their small number. The author asserts that this conception of the pathogenesis of cancer does not conflict with results attained by earlier experiments; it can even explain obscure points, as, for example, the hereditary factors. The apportionment and number of these cells with special properties in the tissues must be inherited. The development and realization of the cancer, as confirmed by all experimentally produced cancers, depend on various external factors, chronic irritations of different kinds, hormone factors, phenomena of age and so on.

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## IMPROVEMENTS IN THE TREATMENT OF CANCER OF THE RECTUM

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BOSTON

Within the past few years there has been definite and important progress in the management of cancer of the rectum. The fundamental principles underlying the successful treatment of this condition have long been established as regards both palliative procedures for temporary benefit and the curative or radical operations that give some encouraging prospect of relief. An understanding of the extension of cancer of the rectum beyond the primary site soon led to better results. The earlier observations, of W. Ernest Miles,<sup>1</sup> but recently reviewed by him, led to the general acceptance of the abdominoperineal resection as the ideal operation. The operation for cancer of the rectum must attempt to remove the involved rectum, an appreciable portion of bowel above and below the lesion and as wide an excision of mesentery and pelvic contents as possible. With this in mind, I strongly believe that the most radical operation should be performed which is consistent with the patient's condition and which offers a reasonable chance for survival. It is the application of this principle—utilizing the correct operation for the individual patient—that has resulted in better results during the past few years.

It is my purpose to discuss the changes in the management of these cases in recent years which has led to the successful treatment of an increasing number of patients with cancer of the rectum in order to bring these facts before the physicians who first see these patients. The discussion in this paper will be limited to carcinoma of the rectosigmoid and rectum, since the lesions in these locations properly should be considered together, because of similarity of position, blood and lymphatic circulation.

In 1934-1935, 106 patients with cancer of the rectum were treated at the Lahey Clinic, of whom I operated on 80 per cent. Dr. Frank H. Lahey and I<sup>2</sup> reported a previous series of 124 cases treated from 1928 to 1933. The experience gained from the treatment of these 230 patients will be the basis for this discussion. It must be conceded at once that the greatest prospect of cure of cancer of the rectum will follow the surgical treatment consisting of an adequately radical resection.

From the Lahey Clinic.  
Read before the Section on Surgery, General and Abdominal, at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 14, 1936.

1. Miles, W. E.: *Postgraduate Surgery*, New York, D. Appleton-Century Company, 1936, p. 1428; *Surg., Gynec. & Obst.* 52: 350 (Feb., No. 2A) 1931.

2. Cattell, R. B., and Lahey, F. H.: *New England J. Med.* 210: 403 (Feb. 22) 1934.

Although definite progress has been made in radiation therapy alone or in conjunction with surgery, the efficacy of this method of treatment probably cannot yet be evaluated. Since the fundamental principles underlying the correct operative treatment for cancer of the rectum have not changed, recent progress has been most evident in the modification and application of these principles. The improvement in the management of cancer of the rectum can be logically divided for discussion into four heads: (1) early diagnosis, (2) preparation of the patient for operation, (3) operation and (4) postoperative management.

### EARLY DIAGNOSIS

It is logical to assume that, with the increasing interest in the treatment of cancer of the rectum in particular, the diagnosis in patients having this condition will be accomplished earlier. A study of the cases observed and treated at the Lahey Clinic from 1923 to 1933 demonstrates clearly that this is not the case. In spite of repeated articles in the recent medical literature dealing with the early as well as with the late symptoms of this disease and with the educational measures carried out to inform the public, a large proportion of the patients who come to the surgeon for treatment have already had symptoms for nine months or more. While this does not exclude the possibility that many of these patients still have a prospect of cure, certainly the number of patients with extension beyond the local area of the bowel wall is considerably increased by this delay. If there is to be further improvement in the results from adequate treatment, it must largely result from the recognition of the earliest symptoms of the disease. It is no doubt true that the lesion is present for some weeks or even months before it produces enough symptoms to call the patient's attention to possible trouble. While it will be necessary to continue general educational measures to make the public aware of the possibility of this lesion, the most important thing at present is to be certain that the physician who first sees the patient recognizes the possibility of malignancy of the large bowel. If he is constantly aware of the frequency of the lesion, either he can carry out the necessary measures for establishing the diagnosis or he can refer the patient for these necessary examinations. A discussion of the symptoms of cancer of the rectum and rectosigmoid cannot be presented in this paper, but the steps in establishing the presence or absence of a malignant lesion in this location should be discussed briefly.

In an analysis of our total group of 525 cases of cancer of the colon and rectum, approximately 55 per cent were found in the rectosigmoid and rectum. The importance of a careful rectum examination is at once evident. A large proportion of these lesions are within

reach of the examining finger and a positive diagnosis can be established by the experienced examiner by this simple measure. In all patients with a suggestive history of this condition, the rectal examination should be followed by a visualization of the area by anoscopic, proctoscopic and sigmoidoscopic examinations. The use of the sigmoidoscope should be routine in every patient presenting bowel symptoms and is just as important as the barium sulfate enema for the demonstration of lesions in the colon above the area of the rectosigmoid. It should be emphasized that the possibility of carcinoma of the rectosigmoid is not eliminated in patients in whom anorectal disease is discovered. It is common knowledge that a considerable number of patients with carcinoma of the rectum and rectosigmoid have had recent local treatment or operation in the anorectal region. It seems evident from this brief discussion that there has been little progress in recent years in bringing a patient with carcinoma to the surgeon at an earlier time. Yet it is in this part of management of cancer of the rectum that the greatest possibility of progress is presented.

The cause of carcinoma of the rectum is, of course, unknown; yet a large amount of evidence has accumulated as to the rôle of mucosal and adenomatous polypi in the development of carcinoma of the rectum. We have had the opportunity to observe repeatedly the transition of polypi into a definite malignant condition of the rectum. The frequent occurrence of malignancy in multiple polyposis of the colon is well recognized. Multiple malignant growths of the large intestine have occurred several times in our series of cases and it is

reserve and have evidences of dehydration and anemia. The preoperative utilization of a high caloric, low residue diet and the administration of a large amount of fluids, salt solution and subcutaneous and intravenous dextrose are of great value. Blood replacement by transfusion should be carried out in the anemic patients. Measures for the relief of obstruction are extremely important, since patients with this condition do not tolerate major surgical procedures well. In the absence of complete obstruction the entire intestinal tract should be emptied by a saline purge, and barium in the colon should be removed by enemas and colon irrigations.

The importance of an adequate preoperative preparation and decompression of the colon in these patients has been emphasized by Rankin,<sup>3</sup> T. E. Jones,<sup>4</sup> Bargen,<sup>5</sup> Abel<sup>6</sup> and others. Undoubtedly, careful attention to this point has permitted a one stage operation to be performed in many patients who otherwise would have required a two stage resection. In cases in which barium has been given by mouth or as an enema, it is advisable to take a flat plate of the abdomen to make certain that the barium has been successfully removed. A long preoperative period of preparation in the hospital is probably not necessary, but sufficient time should be taken to insure getting the patient in the best condition possible before operation. The use of intraperitoneal vaccination will not be discussed, since I have had no experience with it.

OPERATION

The greatest progress in the management of cancer of the rectum in recent years has probably been made in the better selection of the type of operative procedure for the individual patient as well as in the proficiency of carrying out the elected operation. Patients with carcinoma of the rectum are frequently poor operative risks and a prohibitively high operative mortality may result if a radical abdominoperineal resection in one stage is carried out in a routine way. It must be admitted that the ideal operation for every cancer of the rectum from the standpoint of the greatest number of possible cures would be the abdominoperineal resection in one stage. At present in this country there is a decided trend toward the utilization of this operation more than any other. If this trend continues and the operation is generally utilized, there is little doubt that a high mortality will result. It is for this reason that we feel it important to sound a warning against the routine adoption of this operation. In the hands of surgeons who have had considerable experience in the operative treatment of cancer of the rectum the mortality may be kept within reasonable limits, but in the hands of a surgeon who has the opportunity of doing only an occasional operation of this type it will be safer to employ other operations.

In the group of 106 patients operated on in 1934-1935 (table 1), seventy-eight were submitted to resection, an operability rate of 73.6 per cent. Twelve (15.4 per cent) abdominoperineal resections were done in one stage (Miles operation, table 2). In the earlier series of 124 patients, sixty-six were submitted to resection, an operability rate of 53.2 per cent. In this group five one stage operations were done (7.6 per

TABLE 1.—Operability of Cancer of the Rectum

	1934-1935		1928-1933	
Resections.....	78	73.6%	66	53.2%
Palliative operations.....	28	26.4%	58	46.8%
	106	100.0%	124	100.0%

a common finding to discover in the resected segment one or more rectal polypi in the rectosigmoid and rectal segments in addition to the carcinoma for which the resection was done. With the frequent use of the sigmoidoscope these polypi will be discovered at a time before they produce symptoms, and this offers a definite means of reducing the incidence of carcinoma of the rectum if they are vigorously and properly treated. It is my opinion that any polyp irrespective of size or benignancy should be immediately treated by fulguration with subsequent follow-up examinations to show that the mucosa remains smooth over this area. This definitely precludes the development of carcinoma of the rectum from that cause. The discovery of a single polyp should make one definitely suspicious that polypi may be present higher in the colon, and in all these cases the barium enema and double contrast enema should be employed.

PREPARATION OF THE PATIENT

Considerable attention has been paid in recent years to measures that will best prepare the patient for operation, and these have definitely resulted in a lower operative mortality and a lower incidence of serious complications. These measures can be roughly divided into those having to do with the general condition of the patient and with the local condition of the bowel. Many of the patients with cancer of the rectum have lost considerable weight, have a depleted glycogen

3. Rankin, F. W.: The Curability of Cancer of the Colon, Rectosigmoid and Rectum, J. A. M. A. 101: 491 (Aug. 12) 1933.  
4. Jones, T. E.: Surg., Gynec. & Obst. 62: 415 (Feb., No. 2 A) 1936.  
5. Bargen, J. A.: Med. Hosp. 41: 69 (July) 1933.  
6. Abel, A. L.: Proc. Interstate Post-Grad. M. Assembly, 1931, p. 296.

cent). It will be noted that the number of one stage abdominoperineal resections has doubled but is still applied to but one sixth of the patients submitted to resection.

There is a small group of patients with the lesion high in the rectosigmoid but too low to permit a Mikulicz resection, on whom an anterior or abdominal resection has been done as a one stage operation. In these cases a small stump of rectum is left *in situ* below the reconstructed pelvic peritoneum. It is possible to resect sufficient bowel below the lesion to prevent recurrence in this lower segment. We have felt it advisable to drain the presacral dead space by a drain brought out alongside the coccyx. This operation is limited to good

TABLE 2.—Types of Operation

	1934-1935		1928-1933	
One stage abdominoperineal (Miles).....	12	15.4%	5	7.6%
Two stage abdominoperineal (Lahey)...	48	61.5%	33	50.0%
Anterior (abdominal).....	4	5.1%	11	16.7%
Posterior.....	13	16.7%	16	24.2%
Other.....	1	1.3%	1	1.5%
	78	100.0%	66	100.0%

risk patients with a high rectosigmoid carcinoma. In our earlier series eleven (16.7 per cent) anterior resections were done, but in the latest group four (5.1 per cent) were operated on by this plan (table 2). It is in this group of cases that the one stage abdominoperineal resection has been extended. In a comparison of the two series, as seen in the table, it will be noted that decrease in the anterior resections has led to the same relative increase in one stage abdominoperineal resections.

I believe that some modification of the abdominoperineal resection in one stage should be used in a majority of these cases. The two stage operation utilized in this clinic described by Dr. Frank H. Lahey<sup>7</sup> in 1929 and later modified by me<sup>8</sup> possesses distinct advantages. The most enthusiastic proponent for the one stage abdominoperineal resection will admit that there are a considerable number of patients in whom the operation is not applicable. Patients with a lesion of borderline operability because of local extension, inflammation and possible abscess should be operated on by one of the two stage types of operation. It is my opinion that most of the patients of 55 years of age and upward go through the operation with less danger and trouble when the two stage operation is employed. In our earlier series, 50 per cent (thirty-three) of the resections were two stage abdominoperineal operations (Lahey), but during 1934 and 1935 61.5 per cent (forty-eight) were operated on by this method (table 2). The increase in the number of two stage abdominoperineal resections is due to extending the indications for operability to include less favorable cases, as shown by the increase of the operability rate from 53.2 per cent to 73.6 per cent.

There is a further group of poor risk patients that cannot reasonably withstand the radical abdominoperineal resection in either one or two stages. These patients, because of cardiovascular disease, obesity, advanced years or general debility, should be submitted to a more local type of resection, particularly if the lesion is located in the lower segment of the rectum. This operation, first described for the excision of car-

cinoma of the rectum by Kraske and later modified by a number of surgeons, still holds a very useful place. It must, of course, be done in two stages with the first stage consisting of a double barreled or loop colostomy, the rectum subsequently being removed through a perineal incision. In 1934-1935, thirteen (16.7 per cent) posterior resections were performed. This should be contrasted with sixteen (24.2 per cent) resections of this type in the earlier series (table 2). This decrease is entirely due to the utilization of the more radical two stage abdominoperineal resection in some of the poor risk patients.

In earlier series but 30 to 50 per cent of the patients were submitted to some type of resection. There has been definite progress made in increasing the number of patients submitted to resection. In this clinic before 1930 the operability rates averaged from 50 to 55 per cent, varying but little during this entire period. With the decrease in the operative mortality, it was felt justified to submit an increasing number of patients to a radical operation that would have previously been rejected. During the last three years the operability rate has risen and remains above 70 per cent of all the patients observed. This general trend, we believe, is evidenced by the figures of D. F. Jones,<sup>9</sup> Abel,<sup>6</sup> Rankin,<sup>3</sup> T. E. Jones,<sup>4</sup> Hayden and others.

With an increase in operability above 70 per cent, it is of interest to consider the extent of the malignancy in the seventy-eight cases of resection. In six cases the lesion was adherent or invading the bladder, vagina or pelvic organs. Twelve were so extensive that no hope of cure was present and the operation was considered a palliative resection; in four of these there was perforation of the malignant process with abscess. Twenty-five patients were demonstrated to have glandular metastases. It will thus be observed that forty-three (55 per cent) were definitely in the unfavorable group.

The operative mortality in both series of cases is presented in table 3. It will be seen that the mortality remained about the same (from 13 to 15 per cent), although the operability rate was raised from 53.2 per

TABLE 3.—Operative Mortality

1934-1935			1928-1933		
	Deaths	Per Cent		Deaths	Per Cent
78 patients.....	12	15.4	66 patients.....	9	13.6
74 resections*.....	8	10.8	62 resections†.....	5	8.1

\* Four deaths after colostomy in resectable cases.

† Four deaths after colostomy in resectable cases.

cent to 73.6 per cent. The total mortality in all cases considered for resection is presented, although four patients in each group died following colostomy alone. In our experience the mortality after colostomy in both operable and inoperable cases will be higher than in cases in which resection is done. The mortality after resection in the two series was 8.1 and 10.8 per cent.

The operative treatment for carcinoma of the rectosigmoid and rectum should properly be divided into palliative and curative or radical operations. There is little reason to discuss in this paper the palliative operation of colostomy in the inoperable cases of carcinoma of the rectum, since there has been no progress made. The use of radium and x-ray therapy in these cases, particularly following colostomy, has doubtless proved

7. Lahey, F. H.: Surg., Gynec. & Obst. 51: 692 (Nov.) 1930.

8. Lahey, F. H., and Cattell, R. B.: Am. J. Surg. 27: 201 (Feb.) 1935.

9. Jones, D. F.: Ann. Surg. 94: 869 (Nov.) 1931.

of benefit in some of these patients. I feel, however, that radium and x-ray therapy should be used only in the inoperable cases and believe firmly that every patient with a carcinoma of the rectum, no matter how early, should have a radical resection. The use of radium and x-ray therapy alone and in conjunction with surgery has recently been summarized by Shedden<sup>10</sup> and Binkley.<sup>11</sup> Unquestionably, definite progress has been made, and as a better understanding of the methods and dosage is obtained by an increasing experience, they may prove of more help than they are credited with at present. Radiation therapy may increase the patient's comfort by decreasing the amount of discharge, thus relieving rectal discomfort and tenesmus, and by decreasing the size of the lesion, thus helping to relieve pain in the pelvis and in the sciatic nerve distribution.

Mention should be made of the local treatment of early carcinomatous lesions by fulguration or cauterization. Certainly this procedure is still in the trial stage, but it offers little prospect of any encouraging success. An excellent argument against local coagulation evidenced itself in a patient who recently came to the clinic because of tinnitus, with no rectal bleeding or other symptoms. During routine physical examination the digital examination revealed a small elevated area but 2 cm. in diameter on the posterior rectal wall 2 inches from the anus. On proctoscopic examination it did not appear ulcerated but bled easily on manipulation. Biopsy showed malignant adenoma. Local coagulation was considered but rejected and a one stage abdominoperineal resection was carried out. Two glands involved with metastatic growth were found in the resection specimen at some distance away in the mesentery. Radical operation offered this patient a definite chance for cure, while local excision by any means or local coagulation precluded any chance for cure. We feel that coagulation should be limited entirely to the inoperable group of cases.

By increasing the operability rate in patients with carcinoma of the rectum, it must be admitted that resections must at times be carried out in definitely unfavorable cases. Patients should not be submitted to the risk and disability of resection unless there is a reasonable prospect of their continuing to live with a fair degree of comfort for eighteen months or two years. I feel justified in resecting the primary growth in patients with early metastases to the liver if their general condition is good. In patients with local extension of the growth in the pelvis, I believe that resection should be done whenever it is technically feasible to carry out the operation. It is in this group particularly that the two stage abdominoperineal resection is applicable. As the number of unfavorable cases in which resection is done is increased, the percentage of five year cures must logically be decreased. Nevertheless the operative mortality and recurrence rate must not be the paramount factors in determining the cases in which resection should be done. The principle of giving patients the greatest number of years of comfort and usefulness should be the guiding motive here in the application of the radical removal of the growth without regard to the mortality rate, recurrence rate or ultimate death from the neoplasm.

Resection of the presacral nerve during the course of operation for carcinoma of the rectum is easily done in the unfavorable cases. This is a recent surgical

development and, I feel, has definitely contributed to the comfort of patients postoperatively, particularly those with local extension into the pelvis involving the bladder. Resection of the presacral nerve is a relatively simple procedure at the time of an abdominoperineal resection, since the entire area involved has been denuded of the peritoneum in carrying out the resection. It is suggested that this procedure be carried out as a routine in unfavorable cases, even those in which only colostomy is justified.

Definite progress has been made in anesthesia for cancer of the rectum. With an increasing experience with radical resection, the time necessary for performing the operation has been brought within the time of a satisfactory spinal anesthesia. Spinal anesthesia is now employed as a routine in all the better risks. The use of metycaine and nupercaine, the latter in dilute solutions, rather than procaine, has permitted a longer period of spinal anesthesia to be given with the same degree of safety. Ethylene or cyclopropane can be used if necessary to complete the perineal portion. The operative conditions produced by spinal anesthesia have permitted the surgeons to carry out the work under direct vision more expeditiously and more safely than under a general ether anesthesia. The poorer risk patients are advantageously operated on under a cyclopropane general anesthesia and field block of the lower abdominal wall. Better anesthesia has in these cases been a convincingly important factor in the reduction of the operative mortality.

#### POSTOPERATIVE MANAGEMENT

The immediate postoperative care of these patients aims to combat shock, prevent infection and offer general support to the patient. Transfusions should be given as a routine following the resection. The incidence of peritonitis in these cases has been markedly reduced by the two stage measures discussed earlier in the paper and is of infrequent occurrence. It may unavoidably result from a technical complication such as rupture of the growth during removal or separation of the pelvic peritoneal diaphragm during the postoperative period. Pulmonary complications, particularly postoperative pneumonia, infarct and massive pulmonary emboli, are still the major fatality factors to be overcome. In our group of patients postoperative urinary infection is very common as the result of manipulation of the urinary tract and sagging of the bladder into the hollow of the sacrum, with the resulting stasis and infection. All patients are placed on constant bladder drainage for from seven to ten days following operation to combat this. Bladder irrigation and occasional pelvic lavage by cystoscopy are necessary in many of these patients during their postoperative convalescence.

Patients operated on for cancer of the rectum should be carefully followed over a long period of time. A careful and frequent follow-up examination permits the early discovery of local recurrence at a time when further treatment may be of benefit. It is the surgeon's duty to instruct and train the patient in the management of the colostomy. Great progress has been made in this particular. By means of diet and colostomy irrigations in most cases the objectionable bag and apparatus can be discarded.<sup>12</sup> If the colostomy is managed satisfactorily, it should in no wise interfere with the patient's carrying out a useful occupation. In

10. Shedden, W. M.: *Am. J. Roentgenol.* **34**: 498 (Oct.) 1935.  
11. Binkley, G. E.: *Ann. Surg.* **102**: 72 (July) 1935.

12. Cattell, R. B.: *New England J. Med.* **208**: 740 (April 6) 1933.

former years the management of the colostomy was left entirely to the patient's devices, was extremely unsatisfactory and resulted in much of the objections to the acceptance of a colostomy by patients.

In the presence of a recurrence, radiation therapy has a real place. The implantation of radium seeds and adequate x-ray therapy definitely increases the duration of life of these patients as well as contributes to their comfort. With persistent pelvic pain or pain in the lower extremities, the subarachnoid injection of absolute alcohol, which is a recent development, offers definite relief.

In recent years there has been an earnest effort to carry out careful follow-up studies and evaluation of results following the operative management of cancer of the rectum. This must be continued in order to evaluate properly the place of surgery in the treatment of this condition. Likewise, an analysis of the results following radiation therapy must be considered.

In considering the recent progress in the management of cancer of the rectum and rectosigmoid, what results can be expected with the use of the present method? The patient with early and favorable carcinoma of the rectum has every reasonable prospect of cure. Certainly, the results obtained by the present methods of treatment are as good as for carcinoma elsewhere in the body. In considering all patients who have been submitted to radical resection in our series of cases, 42 per cent have been free from recurrence for five years. There is little prospect of improving this figure until progress is made in the earlier recognition of this condition, so that the radical operation can be carried out at the most favorable time.

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#### ABSTRACT OF DISCUSSION

DR. FRED W. RANKIN, Lexington, Ky.: I endorse the principles that Dr. Cattell has enunciated with the one difference that after a good many years of advocating the radical two-stage operation, I have at last joined those who believe that the one-stage combined abdominoperineal resection is preferable. The greatest advance in the treatment of cancer of the rectum during the past decade has been the preliminary preparatory period. No experienced surgeon would undertake an operation for cancer of the rectum without a period of preliminary decompression and rehabilitation. In my service this period of preliminary preparation has been extended to at least seven days and longer in the more devitalized and debilitated patients. A second change in my practice is the abandonment of preoperative intraperitoneal vaccines. So far as vaccination by a vaccine of streptococci and colon bacillus is concerned, I am convinced that my own enthusiasm did not warrant the interpretation I put on the end results. All can agree with Dr. Cattell that there is no one standardized type of procedure applicable to all cases. These cases come to the Lahey Clinic averaging a little more than nine months of symptoms, during which time the patient has known of the presence of cancer. In my series the length of time is a little longer, ten and one-half months. The patient is usually a devitalized, dehydrated individual of middle age who should be submitted to a radical operation if he can stand it, but necessarily many of these patients cannot be operated on by any one type of procedure. My average operability rate has ranged around 60 per cent. In the last eight years it has not gone below 52 per cent. About two out of three patients were subjected to resection, and that included the 10 per cent of cases presenting a movable growth that is resectable but with early metastases into the liver that Dr. Cattell spoke about. I think they should be given the benefit of a resection because a liver death is much more preferable to a death from intestinal obstruction. I found myself doing fewer of my own operations and doing more of the Miles operation while, for the group which seemed too feeble for a radical

procedure, the colostomy and posterior resection of Mummery was preferred. The principles of radical surgery should be applied to cancer of the rectum. With a more careful preparation and more meticulous technic the one-stage operation can be utilized in most cases in which the radical procedure is indicated. There is a small group of cases in which one may use the two-stage operation, either my own or Lahey's or some one else's, but I don't think that we will ever get away from the less radical operation of colostomy and posterior resection in certain cases.

DR. WILLIAM D. HAGGARD, Nashville, Tenn.: By and large throughout the country the great majority of cases of cancer of the rectum are not presented to the surgeon under a year. In cancer of the rectosigmoid about one third of the patients have acute obstruction when they are brought to the surgeon. That is the most severe indictment as far as early diagnosis is concerned. It is all important, in doing a colostomy for obstruction, to bring the cecum entirely out under a glass rod so that one can adequately handle and drain it. The second great essential is the avoidance of even an examination of the lesion itself, because it is waterlogged and reeking with micro-organisms. In enthusiasm and zeal to determine the location and type, one will literally squeeze micro-organisms into the peritoneum and cause the tremendous death rate from peritonitis. The diagnosis can be made ever so easily by a barium sulfate enema after the patient recovers from the acute obstruction. The risk of death for obstruction from cancer is rarely 50 per cent. It should have been used long before. In suspected cases of cancer of the rectosigmoid, because of changes in bowel habit, either constipation or diarrhea, or alternating, with or without blood, one should use the barium enema. In cancer of the ampulla fortunately the great majority of cases can be diagnosed by simple digital examination, which should be regularly done as an essential part of every general examination. I regret to say that medical men and surgeons do not employ it as a routine. I have had the mortifying experience of operating on a patient for other lesions, such as a goiter, and some months afterward have been chagrined to see the patient return with symptoms of carcinoma of the rectum, which was present before. In determining the curability of cancer, lymphatic extension is the deciding factor. Some recent work by Gabriel, at St. Mark's Hospital, has shown that in cancer of the rectum the extension is always upward, and that in about half of the cases the extension to the lymph glands is below the point where one divides the mesentery including the superior hemorrhoidal artery. That is encouraging. It rarely extends laterally or downward until the entire lymphatic chain is blocked. Therefore it should hearten one to think of the suggestion made by Gabriel with regard to those high lying carcinomas of the rectosigmoid that one could, in a small group of cases that might perhaps be enlarged, by early diagnosis, do a resection of the rectosigmoid area including the carcinoma and its tributary glands leaving the sphincter.

DR. RICHARD B. CATTELL, Boston: I must confess that we have been embarrassed during the past few years by the repeated questions regarding intraperitoneal vaccine. In fact most of our visitors ask "Has this patient had intraperitoneal vaccination?" We have always been hesitant to employ it and have had no experience with it because we were afraid to induce a high fever in a debilitated patient a short time before doing a major operative procedure. Dr. Rankin has performed an important service in clarifying this matter before this section. We do no sphincter-saving operations and consequently employ only one of four types of operative procedures, the one-stage abdominoperineal, the two-stage abdominoperineal, the anterior abdominal resection, and the posterior resection. Dr. Haggard brought out a very important point with regard to Dr. Rankin's figures. I am sure that most of us are in agreement with Dr. Rankin that the one-stage abdominoperineal operation is ideal, particularly in the exceptionally good risk; but the point that Dr. Haggard made was that approximately 50 per cent of Dr. Rankin's patients were operated on by the two-stage loop colostomy and posterior resection, which demonstrates clearly that Dr. Rankin agrees as to the value of the two-stage operation. I wish to say a word about colostomy. There is no way with which we are familiar that a colostomy can be constructed so as to have a satisfactory

sphincteric action. The colostomy merely provides an outlet for the intestinal flow; nevertheless I feel that the colostomy can be successfully managed; certainly in a large proportion of the cases and in all the intelligent patients, with rare exceptions, it will move only at a time when they wish it to move. This is done first by means of the diet, secondly by irrigations of the colostomy, and thirdly by doing it at the same time of day each time. If all surgeons had the opportunity of listening to the stories that these patients tell one, five, seven or eight years after operation, who are managing their colostomies successfully, they would not be hesitant in applying radical surgical principles to cancer of the rectum, which involves the formation of a permanent colostomy.

## THE BLOOD PICTURES IN THE PRIMARY DISEASES OF THE LYMPHATIC SYSTEM

### THEIR CHARACTER AND SIGNIFICANCE

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The lymphoid structures may properly be considered as a part of the hematopoietic tissue of the body, since they contribute to the blood stream about 25 per cent of the white cells contained therein. Unlike the bone marrow, however, the lymphoid tissue has a local office to perform in addition to the general one of supplying cells to the circulation. This necessarily results in the separation of the diseases that affect the lymph nodes into two categories: those in which only a local reaction occurs and those in which the general lymphatic reaction is invoked. The latter group, often spoken of as the primary lymph node diseases, represents disorders, all of which are of unknown etiology and often of uncertain pathology, which initiate definite and often pathognomonic changes in the balance between the cells of the circulating blood. The former group, as might be anticipated, either fails to produce recognizable changes in the blood or simply reflects the usual nonspecific signs of any inflammatory reaction. The following discussion will be concerned, therefore, only with the primary lymph node diseases and the blood changes produced by them. Only those diseases susceptible to treatment with radiation will be considered.

### LYMPHATIC LEUKEMIA

Although it has long been the custom to divide lymphatic leukemia into two clinical types, acute and chronic, with aleukemic phases in each, hemocytologic experience has indicated that such a classification is neither sound nor adequate except for the grossest clinical descriptive purpose. That the fundamental change of the leukemic state may exist without any alteration whatever in the cellular content of the blood has been known since the time of Cohnheim<sup>1</sup> and can be verified wherever adequate clinical material is available. One must also recognize the fact that cases occur, commonly in older people, presenting benign sustained lymphocytoses. Another aspect of this disease in which the lymphocytosis amounts to a "low grade" or rela-

tively inactive leukemia persisting for twenty-two years has been reported<sup>2</sup> in one instance within our own experience at the department of medicine at Ohio State University College of Medicine for at least twenty-five years.<sup>3</sup> At the other extreme, it is common knowledge that the course of lymphatic leukemia may be fulminating and end fatally in a few days. Thus, from a hematologic point of view, responses of the lymphatic tissue vary to such a degree that the terms acute and chronic are inadequate to express these changes. Neither do these terms take into account the important relationship of lymphosarcoma to leukemia. Finally, there does not appear to be any justification for the term aleukemic lymphatic leukemia, since there is no fundamental pathologic difference between cases presenting low and high total white blood cell counts.

To emphasize the range of blood pictures found in this disease I shall present charts of each of the less active types. Chart 1 presents the hematologic data in a case of leukemia (the pathologic state) without a leukemic blood picture. This patient has been under observation for two and one-half years, during which time forty-eight studies of the blood have been made. At no time have there been any detectable changes in the blood from either a qualitative or a quantitative standpoint, except perhaps an occasional mild lymphocytosis. Although presenting a generalized adenopathy and moderate splenomegaly, with the lymph nodes (at biopsy) showing the histologic structure characteristic of lymphatic leukemia, his health and tolerance for work have not suffered in any detectable degree. Irradiation has been given this patient, as indicated on the chart, only for the purpose of reducing the size of the nodes.

Chart 2 is a graph of the blood studies of a case of extremely benign lymphatic leukemia that has been under our observation for over five years without any evidence of increase in the activity of the disease. Nine years preceding our contact with this patient a routine leukocyte count, performed prior to a pelvic operation, showed lymphocyte values differing very little from those present at this time. This patient, now 64 years of age, shows no clinical evidence of adenopathy or splenomegaly and, from the standpoint of symptoms, has been totally unaware of any underlying disease. No therapy, radiation or otherwise, has ever been given or needed by this patient for her lymphemia.

From the foregoing it is clear that lymphatic leukemia may be a very benign disorder which does not materially shorten life or measurably diminish health. On the other hand, it may kill quickly. It is probable that there are many more cases in the former group than one would suspect, since many are asymptomatic, do not show physical signs and hence are not seen by the physician. It is certain that practically all the latter more active types are recognized so that it is probable that one has a somewhat distorted view of the incidence of these various types and consequently of the nature of the mechanism of the disease. Certainly the clinical aspects of the former group are of the nature of a benign hyperplasia rather than of a neoplastic process. This is in conformity with cytologic and pathologic

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The roentgen therapy was given under the direction of Dr. Hugh Means, roentgenologist to the University Hospital.

Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the author's reprints.

Read before the section on Radiology at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 14, 1936.

1. Cohnheim, J.: Ein Fall von Pseudoleukämie, Virchows Arch. f. path. Anat. 33: 451, 1865.

2. Minot, G. R., and Isaacs, Raphael: Lymphatic Leukemia: Age, Incidence, Duration and Benefit Derived from Irradiation, Boston M. & S. J. 191:1 (July 3) 1924.

3. F. C., seen in consultation with Dr. C. W. McGavran in 1931, died in 1935 of coronary disease at the age of 77 years. Autopsy showed only moderate glandular enlargement. The case was diagnosed by Drs. McGavran and John Musser in January 1911 from clinical and hematologic data secured at that time. This case will be reported in detail later by Dr. McGavran.

observations, which have been emphasized in a former paper.<sup>4</sup>

The effects of irradiation in this group are recognized almost universally as palliative in that it induces periods of relative symptom free remissions but does not importantly prolong life.<sup>5</sup> The objective of irradiation, therefore, at least from a hematologic point of view, is first to reduce the white blood cell count to the level that provides the most comfort to the patient and secondly to raise the level of red blood cells and hemoglobin so that the symptoms of anemia will not be present. Many patients feel a great deal better with the white count around 50,000 or even 100,000 than they do at a level of 10,000. In our clinic, therefore, irradiation is used as sparingly as possible in order to avoid making the patient radioresistant. The symptomatic complaints due to the enlargement of the lymph nodes and spleen causing pain, dyspnea, circulatory obstruction, diarrhea and the like must of course be kept under control.

As a general rule in this disease, the more inactive the case the better the results of irradiation; the more acute, the less favorable the effects. The rapidly progressive cases (acute variety) do badly. In both types, if the platelets are low, hemorrhagic phenomena are likely to be precipitated. It is therefore often necessary to support the patient with blood transfusions while therapy is being completed in order to avoid undue thrombopenia and anemia.

#### LYMPHOSARCOMA

The term lymphosarcoma is often used loosely to cover all neoplastic states of lymph nodes that are not clearly Hodgkin's disease or leukemia. Such use of the term makes for added confusion in a field in which there is confusion enough. Strictly speaking, lymphosarcoma is a disease in which there is a neoplastic transformation of the lymphocytic strain of cells. Many cases of lymph node disease cannot, of course, be accurately classified with present criteria available for recognition of the various pathologic alterations of

sional low grade lymphocytosis. Often, however, and probably usually, the neoplastic cells break over into the blood stream in greater or lesser number, producing a type of leukemia first described by Sternberg<sup>7</sup> as leukosarcoma. There are many reports in the literature in which the application of the high voltage roentgen therapy over a well localized lymphosarcoma resulted in "leukemia" (leukosarcoma), nearly always of a rapidly fatal type.<sup>8</sup> In general, the literature has not distinguished between the leukemia of this type and

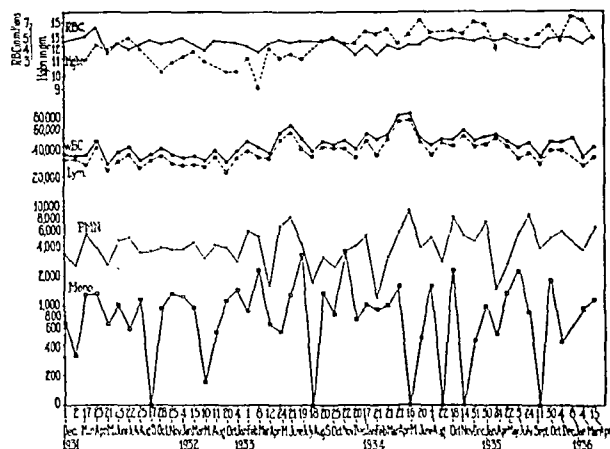


Chart 2.—Blood picture in a woman, aged 64 (J. E. H.), representing a very benign type of lymphatic leukemia. Values for the white cells are plotted on a semilogarithmic scale.

that discussed in the preceding section. An analysis of this question and its significance has been published elsewhere.<sup>4</sup>

Chart 4 shows the results of a series of blood examinations made in a case of lymphosarcoma in which the tumor type of cell (in contrast to normal lymphocytes) was found in the blood stream only intermittently. This case, histologically, answered the description of the tissue described by Brill, Baehr and Rosenthal<sup>9</sup> under the term "follicular lymphoblastoma" and is the most chronic type of leukosarcoma that we have encountered. As the chart shows, the "tumor lymphocytes" or sarcoma cells are considerably more radio-sensitive than the lymphocytes. Following a single dose of 450 roentgens over the right and left inguinal lymph nodes the cells disappeared temporarily from the blood stream, although this dose did not materially affect the level of normal lymphocytes. Therapy was continued until the normal lymphocytes were markedly depressed. The chart clearly shows that the blood was nearly free from these sarcoma cells for a period of about fifty days. The behavior of these cells in response to irradiation as contrasted to the normal lymphocytes, neutrophilic leukocytes and monocytes is shown until the time of the patient's death. Uniformly, the neoplastic cells have reacted quicker and more vigorously to the destructive effects of the roentgen ray than any other cell of the blood. It has been our experience that in this type of case the cells rapidly become very resistant to radiation.

It is clear that in this type of "leukemia" radiation therapy is of little, if any, real value. With the oppor-

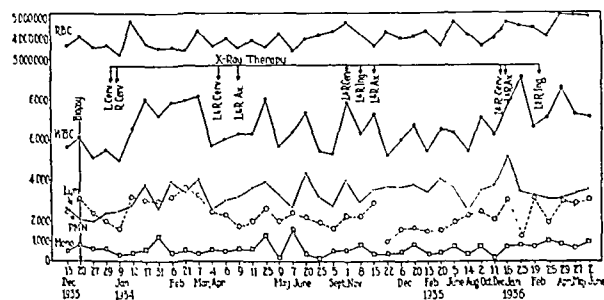


Chart 1.—Blood picture in pseudoleukemia (R. D. B.). Biopsy of left cervical gland, Dec. 20, 1933, showed pathologic conditions to be classic of lymphatic leukemia. At no time have the blood examinations revealed qualitative or quantitative alterations significant of lymphatic leukemia. Irradiation to the cervical, axillary and inguinal regions has been given as indicated solely for the purpose of reducing the enlargements.

this cell. In the following discussion, consideration will be given only to undoubted "true" lymphosarcoma.

From a hematologic standpoint, lymphosarcoma may show no detectable changes in the peripheral blood excepting perhaps a secondary anemia and/or an occa-

4. Wiseman, B. K.: Lymphopoiesis, Lymphatic Hyperplasia and Lymphemia: Fundamental Observations Concerning the Pathologic Physiology and Interrelationships of Lymphatic Leukemia, Leukosarcoma and Lymphosarcoma, *Ann. Int. Med.* 9: 1303 (April) 1936.

5. Leucutia, Traian: Irradiation in Lymphosarcoma, Hodgkin's Disease and Leukemia (a Statistical Analysis), *Am. J. M. Sc.* 188: 612 (Nov.) 1934.

7. Sternberg, C.: Ueber Leukosarkomatose, *Wien. Klin. Wchnschr.* 21: 475, 1908.

8. Kato, Katsuji, and Brunschwig, Alexander: Acute Leukemia Following Lymphosarcoma, *Arch. Int. Med.* 51: 77 (Jan.) 1933.

9. Brill, N. E.; Baehr, George, and Rosenthal, Nathan: Generalized Giant Lymph Follicle Hyperplasia of Lymph Nodes and Spleen, *J. A. M. A.* 81: 668 (Feb. 28) 1925.

this I am in full agreement with Bunting. The most constant finding is a lymphopenia with a monocytosis giving a high monocyte-leukocyte index (over 90 per cent in our series). The total white blood cells are usually within plus or minus 10 per cent of normal limits. There is a distinct tendency to a neutrophilia, often with an absolute increase in eosinophils. A secondary anemia, chiefly of the hemoglobin type, is an almost constant feature. Given, therefore, a blood study that shows a lymphopenia with a high monocyte-lymphocyte index with normal total white blood cells, a mild neutrophilia and any increase at all in eosinophils, one would appear to be justified in suggesting the possible diagnosis of Hodgkin's disease on the basis of the blood examination alone. About 25 per cent of our cases have shown all these changes to be coexistent. I have observed no other disease, save an occasional case of tuberculosis, that gives this blood picture.

The interpretation of this cellular response in a disease of unknown etiology<sup>20</sup> assumes considerable importance and may perhaps be of considerable significance. In the first place, a mild neutrophilia with a normal

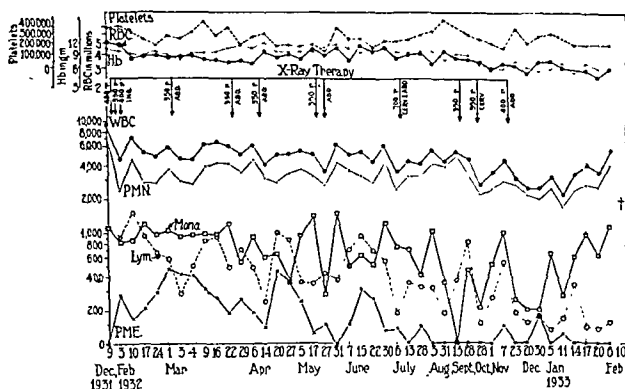


Chart 7.—Blood picture in Hodgkin's disease in a man (G. H.), aged 22, showing progressive diminution in values for all cells during the course of disease. Abbreviations under "x-ray therapy" refer to inguinal, abdominal (epigastrium) and cervical regions. Charting is on a semi-logarithmic scale.

total white blood cell count would bespeak a nonpyogenic infectious agent and may be regarded as evidence against either tumor<sup>21</sup> or virus<sup>22</sup> as the etiologic agent. The pronounced lymphopenia encountered so often with a preponderance of mature types of lymphocytes seems to indicate that the pathologic state is at least not one of lymphoid hyperplasia. Every other disease known that is associated with lymphoid hyperplasia is characterized by the appearance in the blood stream either of normal or of increased numbers of these cells, or else cells with immature characteristics. The evidence obtained from analysis of the blood lymphocytes, therefore, makes it improbable that Hodgkin's disease is a disease of the lymphocyte, even though it occurs principally in lymphoid tissue. This fact makes it appear by exclusion that the pathologic transformation occurs in the reticulum cell, free undifferentiated primitive cells or monocytes. The cytology of gland scrapings tends to implicate the monocyte and/or its primitive ancestors. Monocytes are known to form multinucleated

giant cells with ease,<sup>23</sup> whereas this activity has never been described for lymphocytes, and I have never seen it. The position that the pathologic transformation may be a neoplastic transformation of the lymphocyte is almost untenable, since it does not remotely resemble true lymphosarcoma.

The rather constant presence of a monocytosis tends to support the hypothesis that the underlying abnormality is importantly associated with this cell. This conceivably could be a result of monocytic hyperplasia and in this sense be allied to monocytic leukemia.<sup>24</sup> The monocytic increase also may be the result of a stimulus of nonspecific nature which accompanies all inflammatory reactions. On the other hand, the monocytic reaction may be of a specific nature from tuberculo-phosphatide.<sup>25</sup> The presence of epithelioid cells speaks rather for the latter, and it is possible that the entire train of events occurring in this disease may be the result of or associated with activity of the tubercle bacillus, as recently advocated.<sup>25</sup> It is possible that the occurrence of eosinophils expresses the allergic state, which is such a prominent part in the immunology of tuberculosis.

Considered in its entirety, the evidence obtained from the study of the blood cells, whatever that evidence may be worth, is definitely against this being a disease in which the lymphocyte is involved, except in a secondary sense. An infectious agent, of very low virulence, of nonpyogenic origin which results in pathologic alteration and hyperplasia of the reticulum cell-monocyte maturation cycle, allied on the one hand to the tubercle bacillus or on the other hand to monocytic leukemia, would best explain the cellular reaction produced in the blood by this disease.

This etiologic interpretation of the blood picture in Hodgkin's disease is not, of course, necessarily in conflict with the fact that certain cases exhibit definite neoplastic characteristics. The frequent association of neoplasia with chronic lesions is not unknown in other tissues of the body. This phenomenon, when it arises in lymphogranulomatous alterations of lymphoid tissue, may well explain that type of Hodgkin's disease obviously neoplastic and described by Ewing as "Hodgkin's sarcoma."

#### THE BLOOD PICTURE IN HODGKIN'S DISEASE DURING AND AFTER IRRADIATION

The effects of irradiation on normal blood-forming tissues are too well known to warrant comment. The reaction in Hodgkin's disease, however, is modified by the facts concerning the nature of the blood picture and bone marrow as detailed in the foregoing section. In this disease it is clear that irradiation is started often when considerable anemia and lymphopenia preexist. It is also clear that because the pathologic tissue often extensively invades both the lymph nodes and bone marrow the available amount of functioning hematopoietic tissue may be very small. It therefore follows that very minor amounts of irradiation may produce rather profound changes in the level of red blood cells, neutrophilic leukocytes and lymphocytes. Because of these facts, irradiation in this disease must be given

20. Krumbhaar, E. B.: 'Is Typical Hodgkin's Disease an Infection or Neoplasm?' *Am. J. M. Sc.* 188: 597 (Nov.) 1934.

21. Warthin, A. S.: The Genetic Neoplastic Relationship of Hodgkin's Disease, Aleukemic and Leukemic Lymphoblastoma, and Mycosis Fungoides, *Ann. Surg.* 92: 153 (Jan.) 1931.

22. Gordon, M. H.: Rose Research on Lymphadenoma, Baltimore, William Wood & Co., 1933.

23. Sabin, Florence R.; Doan, C. A., and Forkner, C. E.: Studies on Tuberculosis, *J. Exper. Med.* 52: 113 (supp. 3) 1930.

24. Dameshek, William: Proliferative Diseases of the Reticulo-Endothelial System; Aleukemic Reticulosis, *Folia haemat.* 49: 64, 1933. Doan, C. A., and Wiseman, B. K.: The Monocyte, Monocytosis and Monocytic Leukosis: A Clinical and Pathological Study, *Ann. Int. Med.* 8: 383 (Oct.) 1934.

25. L'Esperance, E. S.: Experimental Inoculation of Chicken with Hodgkin's Nodes, *J. Immunol.* 16: 37 (Jan.) 1929, 18: 127 (Feb.) 1930.

cautiously and be carefully controlled by serial blood examinations. Chart 6 is illustrative of the profound effects that may result from rather light treatment. Following high voltage roentgen therapy of 350-300-300 roentgens given over 120 sq. cm. of skin area of the left axilla, epigastrium and right and left inguinal region over a period of fifty-five days, the red blood cells, neutrophils and lymphocytes fell from preirradiation levels of 3,000,000, 4,000 and 600 cells respectively per cubic millimeter of blood to 2,600,000, 3,000 and 180 cells. Since the counts appeared to stabilize at these levels and since the reticulocytes had not fallen (indicating no apparent damage to regeneration), a second series of treatments was given consisting of 500, 350 and 500 roentgens over 200 sq. cm. of skin area over the mediastinum, right appendiceal region and epigastrium to control persistent symptoms. These exposures were given over a period of twenty-two days. Three days following the last exposure the red blood cells, neutrophilic leukocytes and lymphocytes fell to 1,400,000, 1,100 and 200 cells respectively. The reticulocytes had dropped from 4.2 per cent to 1 per cent.

Although the patient needed further irradiation from a symptomatic standpoint, it was felt that the alarming damage to the hematopoietic tissue precluded additional therapy at this time. Serial counts were performed until the values for the blood cells showed no further rise. After establishing a plateau at levels of 2,000,000, 2,500 and 500 cells each for the red blood cells, neutrophils and lymphocytes, a single exposure of 350 roentgens over 200 sq.

cm. of skin surface in the region of the left axilla was given twenty-six days after the previous exposure. The marked fall in neutrophils and lymphocytes is clearly shown following this single exposure. It is clear that in this case only careful following of the blood changes made possible the application of radiation therapy with safety to the patient.

Chart 7 shows the effects of irradiation on the blood in another patient with Hodgkin's disease who was considerably less susceptible to the adverse influence of the roentgen ray on the blood-forming tissues. Whereas the former case developed alarming anemia and leukopenia following 2,200 roentgens over a period of five months, the present case developed very little change when approximately the same dose was given over a time interval of three and one-half months (to April 8). After continued treatment, however, the blood cell values began to fall on September 13, so that it was felt inadvisable to continue further exposures, since more damage was being done to the blood-forming tissues than was gained in relief from the symptoms of the disease. The patient died February 10 with a profound lymphopenia. The neutrophils and monocytes were the only cells to recover to preirradiation levels.

This case emphasizes the adverse effects on the erythrogenic and lymphocytogenic tissues of the combined effects of irradiation, toxemia and mechanical displacement with pathologic tissue. The advantage,

if not the actual necessity, of guiding radiation therapy with serial blood cell counts is obvious.

Chart 8 shows for a period of over five years the blood changes in a very chronic case of Hodgkin's disease. By judicious application of roentgen therapy as advocated by Craver,<sup>26</sup> the symptoms in this patient have been controlled and he has remained in a state of average good health. The blood examination on his last visit to our clinic, June 24, 1936, showed as good values for all cells as on his first visit in December 1930. I feel that the protection of his blood-forming tissues by avoiding irradiation as much as possible has helped to maintain nutrition and probably ward off infections, which are so often a problem in this disease.

Our experience would seem to indicate that careful blood counts often repeated are valuable if not actually indispensable for the patient's safety, in controlling roentgen therapy in this disease as well as in the leukemic states. Satisfactory lymphocyte and neutrophilic leukocyte values are conceded to be important in order to maintain health. Satisfactory levels of red blood cells and hemoglobin are essential for oxygenation of

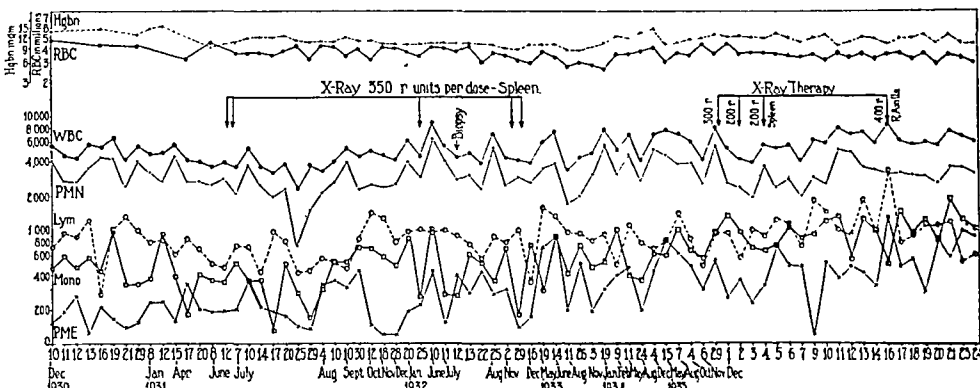


Chart 8.—Blood picture in Hodgkin's disease (H. W.), showing the hematologic events in a very chronic case. Charting is on a semilogarithmic scale.

the tissues in order to maintain strength and maximum metabolic activities. It would therefore seem that the optimum in the treatment of this disease can be attained only when symptoms are controlled without unnecessary additional damage to the blood-forming tissues. This can be assured only by adding the results of careful blood examinations to the other criteria used in gaging the intensity and the time between treatments.

#### SUMMARY

1. The primary diseases of the lymphatic system that may be favorably influenced by irradiation consist of lymphosarcoma, lymphatic leukemia and Hodgkin's disease. It is probable that, excepting the benign hyperplasias, all primary diseases of the lymphoid tissues difficult to classify belong in one of these three classes.

2. All grades of lymphatic leukemia may be encountered, ranging from the pathologic state without leukemia, through benign states resembling chronic lymphocytosis, to those which are very rapidly progressive and rapidly fatal. Many of these types show very little resemblance, cytologically, clinically or histologically, to neoplasia.

3. Lymphosarcoma may be characterized hematologically either by a leukemic or by a nonleukemic blood picture. The former constitutes a type of leukemia

26. Craver, L. F.: Five Year Survival in Hodgkin's Disease, *Am. J. M. Sc.* 188: 609 (Nov.) 1934.

(leukosarcoma) which possesses special features of neoplasia and is rapidly progressive and very radiosensitive.

4. Hodgkin's disease, usually but not always, possesses a characteristic blood picture. These characteristics are interpreted as suggesting an alteration of the reticulum cell-monocyte maturation cycle arising from an infectious agent.

5. Careful blood studies in the control of radiation therapy in this group of diseases are necessary if optimum therapeutic results are to be obtained.

## ROENTGEN TREATMENT OF THE SO-CALLED MALIGNANT LYMPHOMAS

F. W. O'BRIEN, M.D.

BOSTON

The disease entities discussed are described by their common designations Hodgkin's disease, chronic lymphatic leukemia and chronic myelogenous leukemia. Various attempts to classify them on the basis of stem cell or morphologic grounds and the merits of the controversy as to whether one or the other is an infectious process need not detain one. For all essential purposes they involve radiosensitive tissues and behave like neoplastic processes, terminating almost invariably in death.

This report covers a ten year period (1925-1935) and includes only cases that have been checked by biopsy, adequate blood studies and postmortem examination. All sections have been reviewed recently and confirmed by Dr. Frederic Parker, pathologist, and Dr. Henry Jackson of the Lymphoma Clinic of the Boston City Hospital. Any doubtful case has been discarded. Any patient who has been lost to follow up has been considered dead. Any leukemia of less than three months' duration has been considered acute and has not been included, as such is considered unamenable to any form of therapeutics. Any patient having died within one week of the beginning of roentgen therapy has been considered to have had inadequate irradiation and has not been made a part of this study. The patients comprising the statistics have had what has been considered adequate roentgen therapy, alone or in conjunction with other measures.

### HODGKIN'S DISEASE

There were forty-five patients who presented on section a characteristic histopathologic pattern of Hodgkin's disease. There were twenty-eight males, with an average age of 47.6 years; the youngest was 14 and the oldest 65 years. The youngest female was 14 and the oldest 72 years. The average age of the group was 40.6 years.

There are thirty-four dead who had their disease 14.8 months before roentgen therapy and lived 14.4 months after it, a survival average of about two and one-half years.

There are eleven living who had the disease on the average of 11.2 months before roentgen therapy and 21.7 months after, a survival of something better than two years and nine months.

The living, on the average, are living longer after irradiation than did the group that is dead. This may be due to better clinical management since the establishment of a lymphoma clinic and to the irradiation, which was begun earlier in these cases and given more aggressively.

My figures seem to bare out the contention of Minot and Isaacs<sup>1</sup> that life is not prolonged appreciably by irradiation.

Gilbert and his associates<sup>2</sup> believe that roentgen treatment in Hodgkin's disease considerably lengthens the average term of the patient's life to double or even treble from the first appearance of the symptoms. For seventeen living patients they report an average survival rate of six years and five months, but in that group are five patients, one surviving twenty years and six months, one sixteen years and ten months, one twelve years and seven months, one ten years and another nine years and five months. These total sixty-nine years and four months and in a group of seventeen cases are bound to produce a misleading survival rate.

Thirty-seven cases are classified by them as follows: acute (few weeks) one case, subacute (from a few months to two years) seven cases, average type (from 2 to 6 years) twenty-one cases, and protracted (over six years) eight cases.

More than 78 per cent by this classification are of the average and benign types living from two to six years and over. When the series I am reporting is classified similarly, 60 per cent fall into the acute and subacute types which survive two years or less, thirteen cases, or 28.8 per cent, in the average and five cases, or 11.1 per cent, in the benign types. Three of the latter patients survived a total of twenty-five years and six months and undoubtedly created an inflated survival rate (three years and eleven months) for the nineteen cases that I<sup>3</sup> reported in 1931. Of the eleven patients living in the present series, only two have lived beyond six years, one by nine months and the other by three months.

It is interesting to note that the five patients with the benign type in this series who survived the longest received low and medium voltage roentgen therapy. Each one was benefited strikingly by irradiation. When the physical set-ups employed in these earlier cases were reproduced as closely as practicable, the x-ray intensity measured in roentgens was found surprisingly close to that given now with higher voltages.

With the installation of apparatus capable of generating higher voltages, patients were treated with 165, 185 and 200 kilovolts, with appropriate copper filtration, in an attempt to carry out Desjardins' <sup>4</sup> idea of stepping up the voltage as remissions became less permanent and the lesions appeared to become "ray fast." The use of copper filtration and greater distance for medium voltages reduced the intensity much below what was obtained with the aluminum filtration and shorter distance employed in the earlier work, which may account for some of the unsatisfactory results.

For nearly three years now our technic has settled down to 200 kilovolts, 8 milliamperes, 0.5 mm. of copper, 1 mm. of aluminum, 50 cm. distance, about 210 roentgens measured in air per field, and one or two

1. Minot, G. R., and Isaacs, Raphael: Lymphoblastoma, J. A. M. A. **86**: 1185 (April 17) 1926.

2. Gilbert, R.; Babaianz, L., and Kadrnka, S.: L'influence de la roentgentherapie sur l'évolution de la granulomatose maligne, Acta radiol. **15**: 508 (July 24) 1934.

3. O'Brien, F. W.: The X-Ray Treatment of Hodgkin's Disease, Radiology **17**: 1197 (Dec.) 1931.

4. Desjardins, A. U.: The Rationale of Radiotherapy in Hodgkin's Disease and Lymphosarcoma, Am. J. Roentgenol. **17**: 232 (Feb.) 1927.

fields daily or every other day depending on the general condition of the patient, not stopping until a well defined erythema is present, if the urgency of the symptoms warrant. The chief advantage of high voltage irradiation is that it can be used over a long period of time without damage to the patient's skin, and it has of course the added advantage over medium and low voltage of greater penetration if one is treating deep seated glandular masses. The absorbed radiation, irrespective of wavelength, seems paramount. One must not conclude, because in the literature one reads that only "weak doses" of radiation should be given in these conditions, that therefore high voltage irradiation is ill advised. Dosage is a very relative term and must be considered in relationship to voltage, current, filtration, distance, size of field, intensity measured in roentgens, duration, chronological spacing, portion of the anatomy irradiated, and the blood picture before and after treatment.

The damaging effect of x-irradiation on the red blood cells has been greatly overemphasized. It should be recalled that in Hodgkin's disease death is usually preceded by a profound anemia, irrespective of the employment of irradiation. The patients in my series who have lived the longest have had a peripheral blood picture close to normal.

I have seen no case in which anemia has developed that could be directly attributed to the irradiation. Indeed, I have seen many presenting anemia and low hemoglobin return to normal count and color index following irradiation. The explanation may lie in the fact that the irradiation, though intensive, has been fractional, applied locally, with no attempt to cover the entire body by design, the total dose per port given within a relatively short time, and the unexposed portions of the hematopoietic system not being affected, at least not directly.

The following case illustrates this rather well:

A man, aged 34, entered the hospital in December 1932 with Hodgkin's disease, which had been recognized for two years. At the time of his entrance his blood showed red blood cells 4,470,000, white blood cells 14,500, hemoglobin 72 per cent. His chief complaint was pain in the chest. A diagnostic x-ray examination demonstrated right pleural effusion. This cleared under roentgen treatment. After a remission of three months he returned with symptoms referred to his back. X-ray examination showed the lung fields clear with partial destruction of the twelfth dorsal and first lumbar vertebrae. Roentgen treatment promptly relieved the pain. No progression of the lesions in the vertebral bodies was demonstrable. Following a two months remission he returned, complaining of pain in the chest, when x-ray examination showed a tumor mass in the left lower lobe with a small amount of fluid. Roentgen therapy was instituted, followed by a remission of eleven months. In November 1934 he reported, complaining of lack of "pep." Reexamination of the chest showed the left lung field clear and a return of fluid in the right pleural space. He was again treated with high voltage x-rays. Following the last treatment of the series the roentgenologist's note Jan. 11, 1935, was "marked clearing of right lower lung field." Blood examination, February 20, was red blood cells 4,950,000, white blood cells 17,350, hemoglobin 82 per cent. That day he came to the clinic with enlarged glands in the right groin and bilateral iliac nodes, which responded rapidly to irradiation. The note on the blood under date of May 1 states that blood returned to normal; hemoglobin to 95 per cent. All this time he had been performing his duties as a police officer. Two months later paraplegia developed with sensory disturbances as high as the fourth dorsal segment. X-ray examination now showed involvement of all the lower dorsal vertebrae. He was given high voltage roentgen therapy over the dorsal spine through two oblique portals per sitting every other day for forty-five treatments, a total of 5,250 roentgens over a period

of three months. After one month of treatment sensation returned and he was able to move his toes. The amount of radiation measured in roentgens over four years was tremendous and had no appreciable effect on the red blood cells.

With local treatment there is little danger of damage to the red blood cells, especially if the long bones are not irradiated, a practice we abandoned long ago. With teleroentgenotherapy, provided the whole body is irradiated at one sitting and the intensity is too great, anemia indeed may promptly follow.

Although from statistical evidence there is no certainty that irradiation adds to the duration of life in Hodgkin's disease, nevertheless, as Jackson<sup>5</sup> has said, it is the mainstay of treatment.

The obvious direct benefits from roentgen therapy are decrease in the size of regional lymph nodes, decrease in the size of the liver and spleen with consequent relief from pressure symptoms, resorption of pleural effusion, resorption of ascites, relief of pain, restoration of sensibility and locomotion in cord and vertebral metastases, increase in red cells and color index, remissions of the disease with return to occupation, and comparative comfort over long periods of time.

#### CHRONIC LYMPHATIC LEUKEMIA

Twelve patients with chronic lymphatic leukemia were treated by x-rays, ten men and two women, all over 47 years of age. These patients had their disease on an average of 13.9 months before roentgen therapy was begun and lived an average of 14.6 months following it, a total survival of about two years and four months; 50 per cent of the group lived on an average only 3.3 months after irradiation. All of them had a marked anemia as well as an unusually high white blood cell count at the beginning of roentgen therapy. Ten are dead and two are living. The longest survival was that of a man, aged 53, who lived five years and two months, having had only low voltage therapy. Of the two living, one is a woman aged 73, living four years and five months. The last follow-up note, made December 15, one year after her last treatment, reads: "No palpable nodes, spleen and liver not felt." The other living patient is a man, aged 48, who has had his disease two years and three months. In his case the regional glands have responded to roentgen irradiation but the white blood cell count from the start has shown a steady tendency to rise. October 10, 1935, his blood was: red blood cells 4,600,000, white blood cells 221,000, hemoglobin 78 per cent.

#### CHRONIC MYELOGENOUS LEUKEMIA

There are twenty-nine patients with chronic myelogenous leukemia in the series treated by x-rays, twenty men and nine women. The majority were in the fourth decade and beyond; the average duration of the disease before treatment was 16.5 months and after treatment 21.9 months, a total survival average of 3.2 years. There are twenty-five dead, of whom seven lived for six years. There are four living, one a man, aged 41, who has had his disease about nine years; another, aged 62, who has had his disease about five years and ten months; another, aged 41, with the disease one year and nine months, and one woman, aged 34, with the disease two years and eight months.

Some of these cases were treated with irradiated blood, urine concentrates, various proprietary preparations of cod liver oil, naphthalene tetrachloride, pan-

5. Jackson, Henry, Jr.: Primary Tumors of Lymph Nodes, *Commonwealth* 21: 282, 1934.

nuclear material and solution of potassium arsenite. Blood transfusions were not used as a routine. Solution of potassium arsenite was not nearly as satisfactory in lymphatic leukemia as in the myelogenous variety. The remissions were not as prolonged in many cases as with irradiation. To argue that spontaneous remissions occur is not effective, since such is the exception and not the rule.

"In the leukemias, Fowler's solution may be tried" say Witts and Levitt<sup>6</sup> "if facilities for intelligent irradiation are not available."

Irradiation alone has any appreciable effect on the size of the spleen and adenopathy elsewhere. Harassing pruritus is allayed promptly. Iron is recommended for the anemia in leukemias. The red blood cell count and hemoglobin, however, rise quite as often with only roentgen therapy provided myelocytes and small and medium lymphocytes make up the rest of the peripheral blood picture. With myeloblasts and lymphoblasts present, the anemia is progressive and these patients do poorly.

While irradiation by x-rays remains the therapy of choice, it is empirical. In explanation of the resorption of effusion and ascites a physicochemical reaction is presumed. The reduction in size of the glands in Hodgkin's disease may be the result of fibrosis, part of the natural history of the disease, yet irradiation perhaps has stimulated the defensive mechanism of the body to bring this about. The effect most probably is not a direct one but indirect; otherwise it is difficult to explain the disappearance of glandular swellings (the so-called distant effect) outside the direct field of irradiation.

The increase in red cells and hemoglobin is quite likely, owing to physiologic stimulation of the hematopoietic system. Isaacs<sup>7</sup> is very definite that the action of irradiation in the leukemias is one of stimulation of the blood cells to divide if in the blast stage or to mature in a normal manner if of adult character.

Bovie<sup>8</sup> and others, from the analogy of the action of light on the photographic plate and the response of plants to light, cite facts, experimentally deduced, which seem to explain the reaction of the human body in its response to irradiation. In view of the contention that the effect of irradiation is one of stimulation, it is important to restate them:

1. Light produces a photochemical product, and phototropic response occurs only when the amount of this product reaches a certain minimal value.
2. The stimulative effect of illumination may be received by one portion of the body and transmitted to another. Continuity of uninjured cells is not necessary for this conducted effect.
3. Only a small amount of photochemical product is required to initiate the physiologic events through which a modification of structure is brought about.
4. Deficiency in the amount of light results in a delayed or complete failure of tissue differentiation. An exposure to an excess amount of light may result in premature differentiation.
5. Exposure to light is one of the determining conditions of tissue differentiation and, when the light intensity is reduced below the optimum, it may become the limiting factor.

These dicta appear to be particularly applicable in the group of diseases under discussion. No one more than the radiation therapist recognizes that irradiation has not accomplished what might be reasonably expected of it. For that reason many have turned to general body irradiation, which on the face of it seems a logical procedure if these diseases are widespread and systemic even before visible or palpable manifestations are present.

Evans and Leucutia<sup>9</sup> in 1927 recommended irradiation of not only the palpable glandular masses but the entire lymphatic system. Sluys<sup>10</sup> of Brussels advocated total body irradiation, using from ten to fourteen portals of entry successively over two days.

Simultaneous total body irradiation of one surface was described by Dessauer<sup>11</sup> in 1905 when he exposed the head, trunk and extremities of a patient to three x-ray tubes functioning at the same time. He had hoped to use this technic in cancer treatment, but it was not practical at the time because of the danger of absorbing large doses.

In 1927 Teschendorf<sup>12</sup> described a method of treating the leukemias with the x-ray tube placed about 6 feet (1.8 meters) away so as to irradiate a large part of one surface of the entire body at one sitting, which has come to be known as teleroentgentherapy. The anterior surface would be exposed at one time, the posterior at another and the treatments spaced according to the rate of fall of the white blood cell count.

Heublein<sup>13</sup> conceived the idea of continuous teleroentgentherapy with the tube at 18 and 24 feet from the patients. The patients received continuous roentgen therapy twenty hours a day, treatments lasting from 7.5 to 13.9 days.

There have been many modifications of teleroentgentherapy, owing to the limitations of the individual's physical set up. It is known that the irradiation of a plane surface with normal rays is uniform within a circle having the base of the normal ray as center and half the focal distance as the diameter. It is evident that technics dubbed "spray treatment" in which short distances are used are not capable of simultaneous irradiation of one surface of the entire body. It is not yet clear, of course, that such is necessary or desirable.

To cover the entire body the tube must be placed at a distance of 12 feet or more. At the Boston City Hospital a 12 foot distance is employed. With 200 kilovolts pulsating tension 5 milliamperes and 1 mm. of copper with 1 mm. of aluminum, 0.25 roentgen per minute is delivered at the center of the field.

When the distance between the center of the field and its periphery becomes greater than 2½ feet, the intensity of the field diminishes considerably. The head and the feet of the patient receive about 0.16 roentgen per minute. The treatments are spaced and 10 roentgens per surface measured at the center of the field is not exceeded.

Whether one practices continuous or spaced total teleroentgentherapy, it should be made plain that it is not something lightly to be assumed by the novice. The

9. Evans, W. A., and Leucutia, Traian: Roentgen-Ray Treatment of Lesions of the Lymphoid Tissue, *Am. J. Roentgenol.* 17: 54 (Jan.) 1927.  
10. Sluys, F.: La roentgentherapie totale par champs séparés et la teleroentgentherapie dans la lymphogranulomatose, *Ann. d'anat. path.* S: 926 (Oct.) 1931.  
11. Dessauer, F.: Eine neue Anordnung zur Röntgenbestrahlung, *Arch. f. phys. Med. u. med. Techn.* 2: 218, 1907.  
12. Teschendorf, Werner: Ueber Bestrahlung des ganzen menschlichen Körpers bei Blutkrankheiten, *Strahlentherapie* 26: 720, 1927.  
13. Heublein, A. C.: A Preliminary Report on Continuous Irradiation of the Entire Body, *Radiology* 18: 1051 (June) 1932.

6. Witts, L. J., and Levitt, W. M.: Treatment of the Leukaemias, *Brit. M. J.* 1: 762 (April 11) 1936.  
7. Isaacs, Raphael: Maturing Effect of Roentgen Rays on Blood-Forming Cells, *Arch. Int. Med.* 80: 836 (Dec.) 1932.  
8. Bovie, W. T.: Effect of Sunlight on Growth and Development, *Scient. Monthly* 21: 70 (July) 1923.

entire hematopoietic system and glands of internal secretion are exposed to radiation and there appears to be a true threshold dose for each patient which cannot be exceeded without inviting violent reactions.

No one as yet has used the method over a sufficiently long period to justify its universal adoption.

#### CONCLUSIONS

1. Roentgen therapy was used locally in fractional doses in the treatment of forty-five cases of Hodgkin's disease, twelve cases of lymphatic leukemia and twenty-nine cases of myelogenous leukemia over a ten year period with symptomatic relief.

2. Some patients enjoyed relatively good health over long periods of time, but there is no convincing evidence of prolongation of life by irradiation.

3. The patients who lived longest seemed destined to do so when analyzed in the light of the natural history of their disease.

4. A method of irradiation, teleroentgentherapy, may lead to greater salvage in this group.

465 Beacon Street.

### LEUKEMIA OF THE STOMACH PRODUCING HYPERTROPHY OF THE GASTRIC MUCOSA

LEO G. RIGLER, M.D.

MINNEAPOLIS

Generalized leukemic infiltration of the viscera, as well as of the bones, is not uncommon. Frequently it occurs in association with a normal blood picture; i. e., an aleukemic leukemia. The blood picture may change and the characteristic signs of leukemia may appear, but during the aleukemic phase the diagnosis of the nature of the disease is unusually difficult.

Involvement of the gastro-intestinal tract by the various lymphomas—under this broad term Hodgkin's disease, lymphosarcoma, leukemia, aleukemic leukemia and reticulosis may be included—is repeatedly observed at autopsy. From a roentgenologic standpoint, lymphomatous infiltration of the gastro-intestinal tract and more especially of the stomach is of particular interest. The changes produced by this disease in the stomach and upper part of the duodenum are most intriguing because of the difficulty of their recognition during life and the bizarre picture that they present in the roentgenogram. In spite of the many cases of this type reported, there are very few on record in which the diagnosis was successfully made by means of roentgen examination. In the vast majority of the cases, the character of the infiltration was such that the roentgen examination led to a diagnosis of carcinoma rather than of lymphogranuloma.

In the case of leukemia, regardless of the leukemic or aleukemic state of the blood, two types of abnormality of the stomach may be observed on roentgen examination. In the first there is a rather localized infiltration, often near the pylorus, with a marked constriction of the lumen of the stomach. An exactly similar appearance is presented by the other lymphomas. This picture resembles that of scirrhus carcinoma; occasionally the infiltration is so bulky as to simulate a

polypoid carcinoma. Likewise lymphogranulomatous infiltration of the duodenum, as well as of other portions of the small bowel, may present a diffuse infiltrating process with stenosis and obstruction.

There is a second type of abnormality occurring with leukemia; it presents a more characteristic roentgen picture which may, perhaps, lead to a specific diagnosis. As early as 1857, Leudet<sup>1</sup> recorded the observation, at an autopsy in a case of leukemia, of a stomach in which the mucosa was elevated. Again in 1895 de Roth<sup>2</sup> called attention to this phenomenon and noted the resemblance of the rugae to the appearance of the convolutions of the brain. It has been reported from autopsies on many occasions since that time.<sup>3</sup> Both cases of chronic lymphatic leukemia, so-called pseudo-leukemia, aleukemic leukemia, and even a few cases of Hodgkin's disease, have been noted as producing this remarkable enlargement of the folds of mucous membrane of the stomach. Schlagenhauser<sup>3</sup> in 1920 again likened their appearance to that of the gyri of the brain. The case reported by Ikeda,<sup>3</sup> to which I have been fortunate enough to have access, illustrates admirably the characteristic pathologic changes that are present in the stomach. Another such case, from the records of the department of pathology of the University of Minnesota, is shown in figure 1. This shows the opened stomach, removed at autopsy, in a case of chronic lymphatic leukemia. Microscopic study revealed the typical manifestations of leukemic infiltration of the gastric mucosa. Figure 1 demonstrates well the greatly enlarged, tortuous, somewhat rigid gastric rugae, which appear to be characteristic of leukemia.

A systematic report on the roentgen changes in the lymphogranulomas of the stomach was presented by Holmes, Dresser and Camp<sup>3</sup> in 1926. They stressed the difficulty encountered in making this diagnosis, but they had apparently not observed any cases of the type just described. Biggs and Elliott<sup>3</sup> had previously reported such a case with roentgen examination but the latter was not characteristic and hardly resembled the picture seen at autopsy. Their case was one of aleukemic leukemia. Ruggles and Stone,<sup>4</sup> in the course of a report of eleven cases of lymphoblastoma of the stomach, noted in the roentgenograms of some of these a close resemblance to multiple polyposis; one of their illustrations suggests, to some extent at least, the type of case discussed here. In 1933 Mead<sup>5</sup> reported a case of lymphatic leukemia in which I made the roentgen examination of the gastro-intestinal tract. The stomach presented a very bizarre appearance. It was greatly enlarged and the rugae were of tremendous size, with marked tortuosity. Similar changes were found in the duodenum. The roentgen changes were interpreted as being due to an extreme grade of hypertrophic gastritis or an unusual form of multiple polyposis. Later a

1. Leudet, E.: *Compt. rend. Soc. de biol.* **9-10**: 73, 1857-1858.

2. de Roth, G.: *Contribution à l'étude de la leucémie et de ses complications*, Thesis, Geneva, 1895.

3. These reports include:

Wells, H. G., and Mavor, M. B.: *Am. J. M. Sc.* **128**: 837, 1904.  
Symmers, Douglas: *The Relationship of the Toxic Lymphoid Hyperplasias to Lymphosarcoma and Allied Diseases*, *Arch. Int. Med.* **21**: 237 (Feb.) 1918.

Schlagenhauser, F.: *Virchows Arch. f. path. Anat.* **227**: 74, 1920.

Biggs, A. D., and Elliott, A. R.: *Pseudoleukemia Gastro-Intestinalis*, *J. A. M. A.* **83**: 178 (July 19) 1924.

Ikeda, Kano: *Am. J. Clin. Path.* **1**: 167 (March) 1931.

Boikman, W. S.: *Leukemic Changes of the Gastro-Intestinal Tract*, *Arch. Int. Med.* **47**: 42 (Jan.) 1931.

Holmes, G. W.; Dresser, R., and Camp, J. D.: *Radiology* **23**: 17 (July) 1926.

Jørgensen, J. V.: *Ugeskr. f. læger.* **97**: 327 (March 14) 1935.

4. Ruggles, H. E., and Stone, R. S.: *California & West. Med.* **33**: 486 (July) 1930.

5. Mead, C. H.: *Radiology* **21**: 351 (Oct.) 1933.

From the Department of Radiology of the University of Minnesota and the University Hospital.

Read before the Section on Radiology at the Eighty-Seventh Annual Session of the American Medical Association, Kansas City, Mo., May 14, 1936.

tumor mass was also found in the cecum. At operation the changes in the stomach were found to be due partially to infiltration of the gastric wall and partially to enlarged perigastric lymph nodes, which were shown to be leukemic on microscopic examination.

Since then Lüdin<sup>6</sup> has reported one case of aleukemic leukemia with this characteristic picture in the roentgenogram. The rugae of the stomach were greatly enlarged and tortuous. A biopsy, showing lymphatic



Fig. 1 (case 1).—Opened stomach removed at autopsy in a case of chronic lymphatic leukemia. Leukemic infiltration was proved microscopically. Note the greatly enlarged, tortuous rugae resembling the convolutions of the brain. Compare with figure 2.

infiltration of the lymph nodes, led to the diagnosis of leukemic infiltration of the stomach. Later the blood picture changed and presented the evidences of chronic lymphatic leukemia; at autopsy this finding was confirmed. The roentgenologic appearance was shown to be caused partially by the hyperplastic, greatly enlarged rugae, and partially by the pressure of the enlarged perigastric lymph nodes. At about the same time Koch<sup>7</sup> reported two cases with this roentgen picture in both of which the diagnosis of carcinoma of the stomach had been erroneously made. In one patient there was demonstrated at autopsy a chronic lymphatic leukemia; in the other the final diagnosis was lymphogranuloma, but the type was not stated. In 1934 Holmes<sup>8</sup> called attention to this roentgenologic appearance and suggested that it might be pathognomonic of lymphoblastomatous involvement of the stomach.

As already noted, in many instances of leukemic infiltration of the gastro-intestinal tract the blood picture may be normal. This, naturally, has made the diagnosis most difficult; any procedure, such as a roentgen examination of the stomach, which would throw light on the diagnosis, would be of distinct value. With this in mind, attention is again called to the characteristic roentgenologic appearance that leukemia of the stomach may present. The following case is reported to indicate that it may be possible to make this diagnosis even in the presence of an aleukemic state of the blood:

**CASE 1.**—A white man, aged 69, complained on admission of masses in the mouth, cheeks and neck. These had been present for two years, during which time he had become weak and tired. The past history was without significance. There were no complaints referable to the stomach.

6. Lüdin, M.: *Röntgenpraxis* 5: 816 (Nov.) 1933.

7. Koch, C. E.: *Fortschr. a. d. Geb. d. Röntgenstrahlen* 48: 271 (Sept.) 1933.

8. Holmes, G. W.: *Radiology* 23: 17 (July) 1934.

Physical examination revealed small masses in the floor of the mouth and near the tonsils. There were palpable masses under the left mandible, in both cervical, axillary and inguinal regions, of small size. The salivary glands all appeared enlarged and later there appeared some enlargement of the lacrimal glands. The skin over the neck was indurated. In addition there was a basal cell carcinoma near the outer canthus of the eye.

Examination of the blood on numerous occasions gave entirely normal results. The hemoglobin was 85 per cent; the red blood corpuscles numbered 4,960,000; the white blood cell count ranged from 7,600 to 9,000. Differential counts gave neutrophils 56 per cent, lymphocytes 38 per cent, monocytes 6 per cent. The percentages and total count varied from time to time but were substantially similar. No abnormal cells could be detected at this time. There were no other laboratory observations of significance.

Biopsies of a cervical lymph node and of the skin revealed a leukemic infiltration of characteristic type, so a diagnosis of aleukemic leukemia was made.

Roentgen therapy was applied to the enlarged lymph nodes, the salivary glands, the lacrimal glands and the skin. Treatment was also given to the basal cell carcinoma. Rapid and complete disappearance of the abnormalities ensued except for the inguinal and axillary lymph nodes, which remained palpable.

Fifteen months later the patient was again examined. At this time he complained of acid eructations. The lymph nodes were still palpable in the axillary and inguinal regions, but there were no other abnormalities.

Three years after his original admission he returned, complaining of severe pain in the epigastrium coming on shortly after the intake of food. There was a heavy feeling with much gas, and all solid food was distressing. Some loss of weight had occurred and he had severe constipation. The physical examination was essentially negative but a tentative diagnosis of carcinoma of the stomach was made and he was sent in for roentgen examination of the stomach.

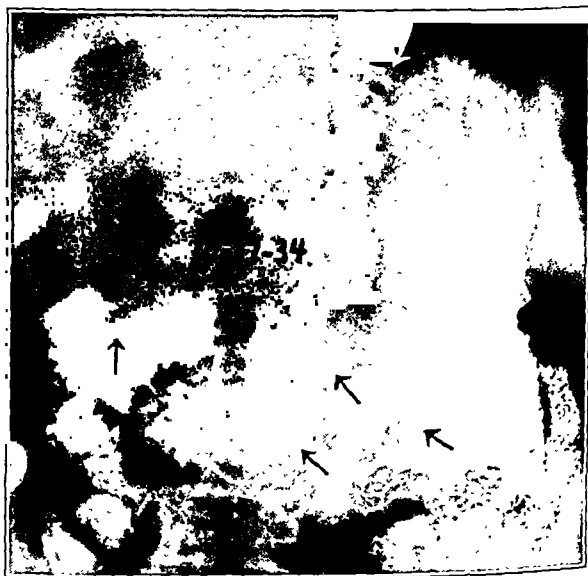


Fig. 2 (case 1).—Aleukemic leukemia: Roentgenographic appearance of stomach with small amount of barium sulfate and pressure on Oct. 17, 1934. Moderate sized stomach with enormously hypertrophied rugae, which are very tortuous and irregular, is shown. Marked increase in the folds of mucous membrane throughout the stomach, even involving the distal end of the esophagus. Enormous size of the folds is shown, indicated by the arrows. Involvement of the duodenal bulb by the same type of process is shown (arrow). Compare with figure 1.

The stomach was moderately dilated and showed a remarkable enlargement of the rugae throughout (fig. 2). These were irregular and tortuous and could hardly be obliterated even with the stomach overfilled. There was marked hypertrophy of the mucosa on the lesser curvature as well as on the greater. Peristalsis, flexibility and mobility of the stomach were normal. There was a distinct enlargement of the folds of mucous mem-

brane in the distal end of the esophagus, and the duodenum showed much the same appearance as the stomach. Without any knowledge of the previous history, the following roentgenologic diagnosis was made: "Probable leukemic infiltration of the esophagus, stomach and duodenum. Possibility of extreme chronic hypertrophic gastritis to be considered."

Roentgen examination of the colon showed no abnormality. Reexamination of the stomach gave the same results.

Analysis of the gastric contents showed total acids from 59 to 86 units, free hydrochloric acid from 36 to 73 units.

The patient was put on an ulcer management for two months without relief. Gastroscoy was done but the results were indeterminate.

He was then admitted to the hospital for radiation therapy. Sixty per cent of a skin erythema dose of x-rays at 200 kilovolts was administered over the anterior gastric area and 30 per cent of a skin erythema dose was given over the posterior abdominal wall in the gastric region in three doses within twelve days. A total of 645 roentgens was administered. The leukocyte count dropped to 2,050 and the treatments were discontinued. It rose shortly to 3,750 and later to 5,900, but no further treatments to the stomach were given. He had developed, before these treatments, a considerable degree of anemia (hemoglobin 63 per cent), and this persisted.

Within two weeks there was a remarkable improvement in the gastric symptoms, and a month after the treatments the symptoms had practically disappeared. Roentgen examination of the stomach within three weeks after the treatments revealed a marked decrease in the size of the gastric rugae, and after three months (fig. 3) the picture had changed considerably. While the rugae were still somewhat above normal in size, the decrease had been most striking. The stomach as a whole was smaller and the improvement was unmistakable.

Later the axillary lymph nodes enlarged and were treated with x-rays. Gastric symptoms recurred and irradiation of the stomach was again instituted. Shortly thereafter the spleen became palpable for the first time. It was irradiated, with a prompt decrease in size. Repeated enlargements of various groups of lymph nodes occurred thereafter and the spleen became markedly enlarged. Later the liver also enlarged and the anemia became more pronounced. Blood smears at this time began to show many atypical and immature lymphocytes. The patient became weaker and died about four years after he was first admitted. Autopsy could not be obtained.

This case is of particular interest because of the characteristic roentgen picture and the typical response to roentgen therapy, which might be expected from leukemic infiltration. While the blood was normal until shortly before death, the microscopic examination of the biopsies of a lymph node and of the skin established the nature of the disease. Furthermore, the late enlargement of the spleen, the enlargement of numerous groups of lymph nodes and their characteristic response to irradiation confirmed the diagnosis of aleukemic leukemia. Certain facts should be noted in detail: The stomach was extensively and very diffusely involved but was increased rather than reduced in size. The folds of mucous membrane were greatly hypertrophied, sinuous, irregular and equally prominent on the two curvatures. Peristalsis, mobility and flexibility of the stomach wall were well preserved. What is even more significant, the first portion of the duodenum was affected in an exactly similar way, a most important sign to distinguish this lesion from carcinoma. This particular finding has been emphasized in recent reports of this condition. A comparison of figure 2 with figure 1 indicates clearly the close correlation between the roentgen signs and the gross pathologic changes of this condition. The rapid and striking response to radiation therapy, particularly the roentgen demonstration of reduction in the size of the rugae, is also confirmatory evidence of the nature of the disease. This

reaction represents here, as elsewhere in the body, an important therapeutic test for leukemic infiltration. It would seem that all these roentgen changes should be characteristic of lymphoblastomatous involvement of the stomach.

In searching for other cases of this type, a number of patients have been observed in whom extreme enlargement of the rugae of the stomach is present without any signs of leukemia, aleukemic leukemia or any other lymphomas being present. These are cases which ordinarily might be classified as chronic hypertrophied gastritis except that the enlargement of the folds of mucous membrane is far beyond that usually found and are diffuse throughout the stomach. One of

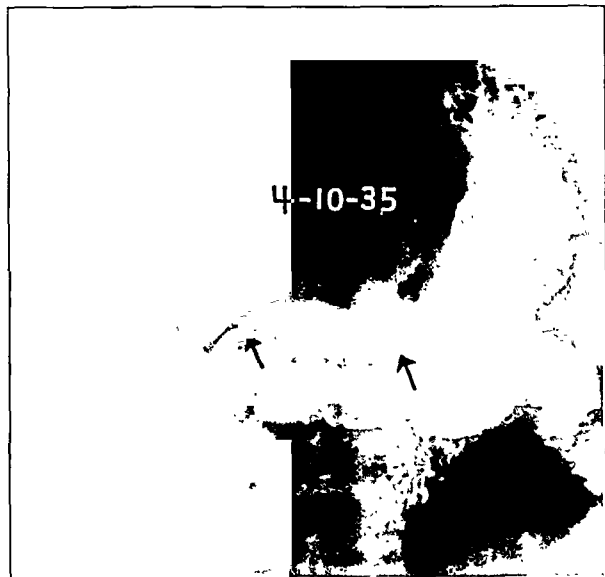


Fig. 3 (case 1)—Aleukemic leukemia: Stomach April 10, 1935, after roentgen therapy. Compare with figure 1. Note striking decrease in size of gastric rugae and general change in mucosal markings, indicating effects of irradiation on leukemic hyperplasia of rugae.

these cases is detailed here to indicate its resemblance to the case of aleukemic leukemia previously described and to bring out certain differences:

**CASE 2.**—A white man, aged 36, complained of severe pain in the epigastrium increasing for one year. The pain was worse after heavy meals or hard work. There was nausea, no vomiting, no qualitative food distress, and no relief from food or medication. The appetite was normal and there was a slight loss of weight. An appendectomy had been performed four years before and he had had a hernia for one year.

The physical examination was entirely negative except for the evidences of a right indirect inguinal hernia. Slightly palpable inguinal nodes were found but were not more prominent than usual. No other enlarged lymph nodes were found and the spleen was never palpable.

Roentgen examination of the stomach with a barium sulfate meal was done. The stomach was normal in size but showed a generalized striking increase in the size of the gastric rugae (fig. 4). These were sinuous and not readily compressed. Mobility and flexibility of the stomach were normal, while the peristaltic activity was increased throughout the stomach. The first portion of the duodenum showed also a marked hypertrophy of the mucosa, the appearance simulating that in the stomach. No evidence of ulcer or tumor was obtained. The roentgenologic diagnosis was "chronic hypertrophic gastritis and duodenitis of marked degree. Possibility of leukemic infiltration must be considered."

Cholecystography revealed a normally functioning gallbladder. Reexamination of the stomach produced the same results.

Repeated studies of the blood were made. The hemoglobin ranged from 90 to 100 per cent. The red blood cell count was 4,900,000. The count of white blood cells ranged from 8,800 to 11,900, being persistently slightly higher than normal. Neutrophils ranged from 57 to 71 per cent; lymphocytes ranged from 22 to 36 per cent. The eosinophils were constantly increased above the normal, ranging from 3 to 13 per cent. There were no immature or abnormal cells.

Analysis of the gastric contents gave total acids from 12 to 41 units, free hydrochloric acid from 8 to 32 units. All other laboratory tests were negative.

He was placed on bed rest and a restricted diet regimen for five weeks without any particular relief or any change in the roentgen signs.

Irradiation of the stomach was proposed with two possibilities in mind. If this was a case of aleukemic leukemia with leukemic infiltration of the stomach, a rapid and favorable response might be expected. It was also considered possible that the lymphocytic infiltration that occurs in chronic hypertrophic gastritis might be favorably affected by irradiation. Accordingly he was given a moderate dosage of x-rays at 200 kilovolts, 90 per cent of a skin erythema dose being applied over the anterior wall of the abdomen in the stomach area in

been any enlargement of the spleen or any of the remaining lymphatic apparatus. What is even more significant is the signal failure of response to radiation therapy. There was no relief of symptoms and no diminution in the size of the mucous membrane folds.

It seems evident that this picture of marked enlargement of the rugae of the stomach is not entirely pathognomonic of lymphoblastomatous infiltration but when encountered should arouse suspicion of this condition in every instance. Differentiation from non-malignant hypertrophy of the gastric mucosa may possibly be made by means of a therapeutic test with irradiation. The rapid and favorable response of the leukemic case is in sharp contrast to the failure of irradiation in the simple hypertrophic gastritis.

#### SUMMARY

1. Leukemic infiltration of the stomach may produce a striking picture of enormously enlarged gastric rugae resembling the convolutions of the brain. Involvement of the duodenum is usually found.

2. Radiation therapy will cause a marked reduction in the size of these folds and a corresponding improvement in the gastric symptoms presented by the patient.

3. The roentgen signs in the stomach may be obtained regardless of whether or not blood changes are present.

4. Other lymphogranulomas may possibly produce a similar appearance.

5. Chronic hypertrophic gastritis of extreme grade may simulate these roentgen appearances. Radiation therapy may possibly serve as a therapeutic test, as it does not appear to produce any change in the symptoms or roentgen signs in these cases.

#### ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. WISEMAN, O'BRIEN AND RIGLER

DR. ROSS GOLDEN, New York: Dr. Rigler is quite right in saying that this leukemic infiltration may be simulated by other forms of this group of diseases. I have had at least four cases in which the pathologists made a diagnosis of lymphosarcoma and the roentgen picture could easily be confused with what he has shown. Martin described a helpful point, that the involvement in so-called lymphoblastoma of the stomach may be multiple; that is, of the fundus and also of the pyloric part or the simultaneous involvement of the duodenum and the stomach. He also pointed out the exaggeration of the mucosal folds. However, exaggeration of the mucosal folds may be present in other conditions. In a number of instances when a neoplasm, not typical of carcinoma, was present with exaggeration of the mucosal folds, the possibility of lymphoblastoma has been suggested only to have the biopsy disclose carcinoma. Unless the duodenum is involved, the diagnosis of lymphoblastoma of the stomach is very difficult and is likely to be wrong. A very important step is to think of the possibility of the disease. The attempt to diagnose it is well worth while because of the very satisfactory response to radiotherapy. One patient, an employee of the hospital, is now alive and well four years after operation for a perforated lymphoblastoma of the stomach. Dr. O'Brien repeated the statement frequently encountered in the literature that roentgen therapy probably prolongs but slightly, it at all, the life of the patient, although it may greatly improve his physical condition. This statement, to which I am unable to subscribe, seems to me to deserve further and much more critical analysis. The site of onset of Hodgkin's disease may be roughly classified under four headings: first, and probably the most common, is the peripheral lymph nodes; second, the chest, usually the mediastinum; third, the abdomen, often the gastro-intestinal tract, and, fourth, the osseous system. The last is quite uncommon in my experience, although I have seen two or three cases of it. This disease

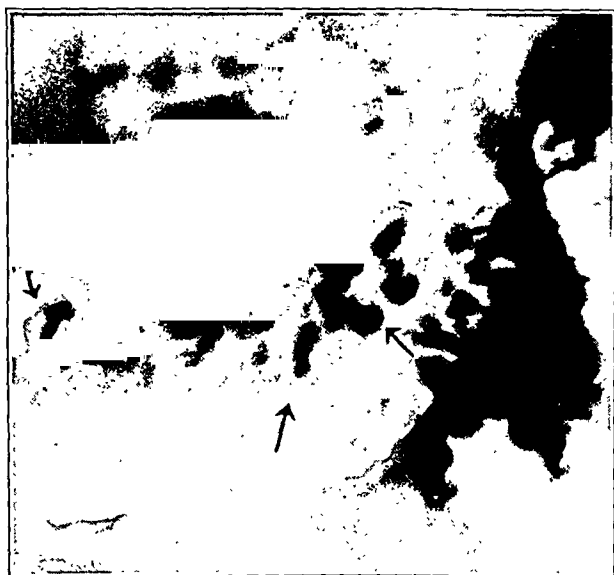


Fig. 4 (case 2).—Chronic hypertrophic gastritis without evidence of leukemia. Note markedly enlarged rugae of stomach (arrows) and similar involvement at base of duodenal bulb (left arrow). Note how this picture resembles that of previous case shown in figure 1.

three treatments over a period of twenty-four days. A total of 645 roentgens was given. Two months later 860 roentgens was given in much the same manner.

There was little or no response to this treatment. The blood remained about the same; the symptoms were not affected after the first reaction to the irradiation had been overcome. Reexamination of the stomach with the barium sulfate meal showed no appreciable change. The patient has been followed for eighteen months and numerous forms of treatment have been instituted without success.

The roentgen signs remain about the same.

Gastroscopy was recently attempted but was unsuccessful because of inability to pass the tube.

The roentgen appearance in this case is similar to those previously discussed. The rugae of the stomach are greatly enlarged, tortuous and irregular; the changes in the duodenum are similar. The intensive studies of the blood and the physical examination, however, have revealed no evidence whatever to suggest the presence of leukemia. Obviously, the latter cannot be entirely excluded without long continued observation, but during a period of eighteen months there has never

may kill a patient early in its course by interfering with some vital function, such as respiration, by producing tracheal compression. Roentgen therapy, if properly applied, may for years prevent tracheal compression, intestinal obstruction, perforation of a viscus, and a number of other complications that may result in very early death of the patient. Obviously, peripheral lymph node involvement offers no immediate threat to life. If the patients live long enough, the disease almost invariably becomes generalized; bones and the abdominal lymph nodes, as well as peripheral lymph nodes, may be involved, and at the end it is sometimes hard to tell just what the mechanism of death may be. I should like to see such a series of cases analyzed from the standpoint of the site of onset. I believe that would give a different picture of the part played by roentgen therapy in Hodgkin's disease.

DR. ISRAEL DAVIDSOHN, Chicago: I should like to emphasize the remarks Dr. Wiseman made with regard to the necessity of a more careful study of the morphologic features of the blood. He is right when he demands that the finer phases of the examination of diagnostic importance should be carried out by an expert. However, I wish to take issue with his remark in which he stated that the blood count should not be done by the technician. I hope he will elaborate on that point, because I am afraid that soon some of my colleagues will be told that they should not have their technicians do any more blood counts. That might create a difficult situation. I hope that Dr. Wiseman will agree with me that the quantitative part of the count can be done by a good technician, but I agree that for details of the morphologic study of the blood smear the expert must be responsible, particularly in complicated cases. I should like Dr. Wiseman's opinion on blood examination in mycosis fungoides, which is of considerable interest to radiologists. I have seen cases in which the blood examination gave results indistinguishable from those commonly seen in Hodgkin's disease.

DR. B. K. WISEMAN, Columbus, Ohio: Examination of the blood is one of the oldest of laboratory methods for obtaining facts concerning disease. It is also one of the youngest. The older technics, in which use was made of fixed, stained and therefore necessarily dead cells, continues to be a valuable method for the study of blood cells. However, the recent advances that have been made, particularly by the Sabin school, in which living cells stained with vital dyes are utilized, has added so much to our concepts relating to the pathologic physiology of blood formation that no hematologist today can disregard this newer hematology. With the addition of this most important refinement to cytologic study, hematology has evolved from a laboratory procedure dominated largely by technicians to a science requiring the efforts of the most skilled and highly trained cytologists. Experience has convinced me that blood "counts" executed in the time honored way well deserve the disapprobation so often accorded them by clinicians and must be replaced by adequate examinations in which technical methods are executed by physicians possessing adequate comprehension of the cytology of blood cells and the basic principles of the physiology and pathology of the blood-forming tissues. Failing in this, much if not most of the value in interpretation of the changes in the blood will be lost. Due recognition is accorded the fact that the conditions as outlined cannot as yet be met generally; nevertheless, this objective is not impossible to attain if its importance is fully recognized. These remarks refer, of course, only to the critical examination of the blood cells; mechanical procedures, including total counts, reticulocyte and platelet counts and hemoglobin estimations, properly belong in the domain of the technicians. Relative to the blood observations in mycosis fungoides, I am compelled to evade a direct answer to this question on the ground that identification of this clinical state is uncertain when reference is made to a clear-cut pathologic lesion. I recall two cases presenting the pathology of the skin lesion resembling Hodgkin's granuloma, in which a blood picture was obtained similar to that of systemic Hodgkin's disease. Other cases with indefinite pathologic appearance showed a blood picture correspondingly not characteristic of any particular disease syndrome.

DR. F. W. O'BRIEN, Boston: I think that Dr. Golden's point is well taken, and when I talk about survival rate of course I do not mean that roentgen irradiation is not a life-saving

measure. I think it is something more than the palliation gesture to which Dr. Wiseman refers. Quite as much is done with it as with any of the chronic kidney diseases or chronic heart diseases, but considering the natural history of these diseases, some patients are destined to live a long time. One case in the Boston City Hospital I have followed for twenty-six years, and three biopsies have been made. Another patient, operated on fourteen years ago, is living after seventeen years. Neither has had any kind of roentgen irradiation. I am sure that if we had treated them we would have felt, as Gilbert and his associates do, that the disease had gone through a stage of evolution, as he describes it. It comes back again to the point Dr. Golden made, that the site of the disease has a great deal to do with the prognosis, and if we ever get a large enough group of cases I hope to analyze the group according to that idea.

## THE SURGICAL RELIEF OF IMPOTENCE

### FURTHER EXPERIENCES WITH A NEW OPERATIVE PROCEDURE

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AND

JAMES L. BRAY, M.D.

NEW YORK

The value of an operative procedure is determined only by the results obtained and the permanence of these results. This is especially true in an operation that has been designed for the cure of impotence. Immediate results are often misleading, and it is only by experience with many patients for a long period of time that one is able to choose the type of case suitable for the operation, to modify the operative technic if necessary, and last, but not least, to state with a fair amount of accuracy the result that will be obtained.

About one year and nine months has elapsed since the first patient was operated on for the relief of impotence by a new method developed by the senior author. The operation was first performed in the Department of Experimental Surgery<sup>1</sup> at the New York Hospital.

The first patient operated on has shown no reduction in his sexual competence, and the other patients successfully operated on have remained cured.

The present communication is not concerned with impotence due to syphilis, cerebrospinal lesions or glandular deficiency but with sexual inefficiency resulting from (1) traumatism of the perineum following an external blow or surgical operation, (2) inflammatory lesions of the perineum resulting in extensive scar formation, (3) lack of muscle tone, and (4) advancing age. Our particular concern is with the first, third and fourth groups—those who are impotent because of traumatism to the perineum and the older group of men, who have ample libido, normal testicles and hence normal secretion of the sex hormones, and no interference with the nervous tracts involved in the sexual act, but who cannot have erections because of failure of the physiologic activities of this part of their anatomic structure.

Much experimental work has been done in an endeavor to relieve impotence in the many whose libido is unimpaired but whose sexual efficiency is diminished or absent.

Owing to lack of space, this article is abbreviated in *THE JOURNAL*. The complete article appears in the reprints, a copy of which will be sent by the authors on receipt of a stamped addressed envelope.

1. The authors are indebted to Profs. George Heuer and Joshua Sweet for their cooperation in the conduct of the animal tests necessary for these experiments.

# OPERATIVE AND NONOPERATIVE TREATMENT OF IMPOTENCE

Treatment of impotence may be divided into general and local. Surgical treatment, with which we are here primarily concerned, is of course a local measure. General measures are chiefly medical and physical therapeutic.

In some cases of organic impotence—for example, those due to induration of the penis—operation has

Later he conceived the idea of grafting slices of human testicle, taken from a living or recently dead subject, between the layers of the rectus muscle. The testicle to be implanted was cut into slices from 1 to 2 cm. thick; these were denuded of the tunica albuginea and placed in a bed previously prepared for them in the rectus muscle. The muscle sheath was sewed with catgut and the skin with silkworm gut. In most cases the transplants absorbed within a few months, and the potency of the individual declined to its former state. Those cases in which the operation appeared to have accomplished its purpose were probably instances of psychic impotence, with no actual loss of sexual power. The operation had a very limited application owing to the difficulty of procuring material for grafting. Occasionally men were found with a functioning testicle in the scrotum and an ectopic testicle in the inguinal canal or elsewhere, requiring surgical removal and with which they were willing to part for a substantial consideration. In still rarer instances the testicles of suicides and of executed criminals would be available.

Stanley<sup>6</sup> of California produced the same result by injecting sterile particles of sheep's testicles with wide bore needles.

With the idea of conserving the internal secretions essential to virility, some surgeons have tied off the vas deferens. This was done several generations ago in

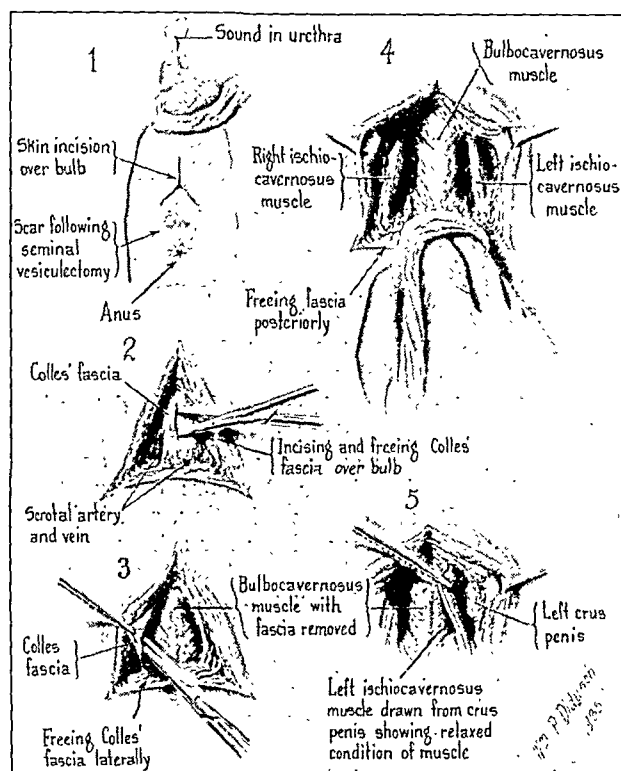


Fig. 1.—Operation for impotence: 1. Skin incision with sound in urethra. 2. Incising and freeing Colles' fascia over bulb. 3. Freeing Colles' fascia laterally over ischiocavernosus muscle. 4. Freeing Colles' fascia posteriorly. 5. Left ischiocavernosus muscle held up, showing relaxed condition of muscle.

often proved worse than useless, so that palliative treatment is resorted to even in cases apparently well suited to surgery.

The theory underlying ligation of the dorsal vein is similar to that on which are constructed the mechanical devices obtainable for assisting erection. These function by compressing the veins and preventing their too rapid emptying, thus maintaining the penis in a turgid state. As Wooten<sup>4</sup> explains it:

In atonic impotence there is a loss of tonicity in all of the tissues, and a relaxed dilated condition of the veins and sinuses. The ligation of the dorsal vein cuts off the main exit of venous blood and collateral circulation eventually takes its place.

Transplantation of the testicle, advocated by Lespinasse<sup>5</sup> nearly twenty years ago, received wide newspaper publicity and was generally referred to as the "monkey gland operation" or "rejuvenation." Lespinasse himself made no such fantastic claims. Believing that most cases of impotence were due to failure of internal secretions, he at first attempted to correct this, in men young enough to have active endocrine glands, by the administration of glandular extracts.

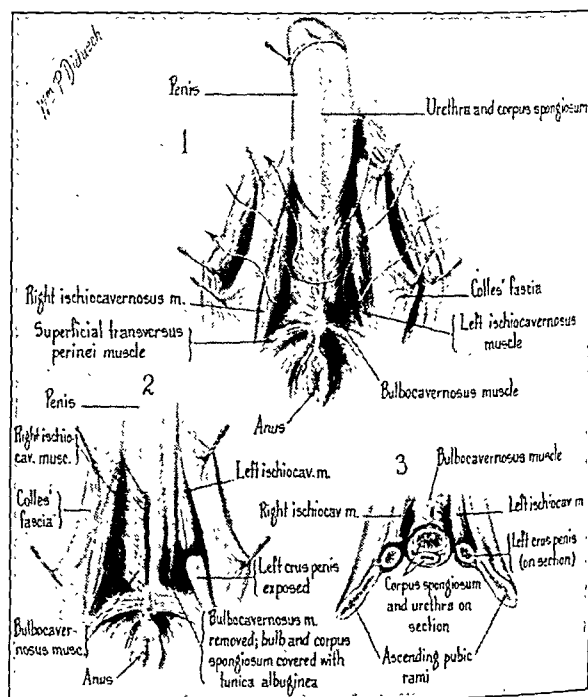


Fig. 2.—Operation for impotence: 1. Anatomy of perineum; muscle of perineum involved in plication procedure; method of placing plication sutures. 2. Left side of bulbocavernosus muscle removed, showing left crus penis. 3. View on section, showing muscles—crura, urethra and corpus spongiosum—shows how the muscles surround the corpus spongiosum and the crura and the action that plication of these muscles would cause.

an attempt to reduce prostatic hypertrophy. Hirsch's<sup>7</sup> comment on this procedure was as follows:

Let us grant that blockage of the vas will increase the vital secretions produced by the cells of Leydig. Can we picture such substances remaking new penile arteries; or causing the calcium deposits within the vessel walls to absorb; or dissolving

4. Wooten, J. S.: Ligation of the Dorsal Vein of the Penis as a Cure for Atonic Impotence, *Texas M. J.* 18: 325, 1902-1903.

5. Lespinasse, V. D.: Impotency: Its Treatment by Transplantation of the Testicle, *Surgical Clinics, Chicago* 2: 281 (April) 1918.

6. Stanley, L. L.: An Analysis of One Thousand Testicular Substance Implantations, *Endocrinology* 6: 787 (Nov.) 1922.  
7. Hirsch, E. W.: Sexual Impotence of Organic Origin, *Clin. Med. & Surg.* 37: 350 (May) 1930.

the scar tissue which has replaced the intima of the helicine arteries? The urologist cannot remake tissue. Some cases are beyond his aid; others he can improve; and some he can return to a normal condition. No one has ever been able to make young tissue out of old tissue, and the urologist should not be expected to accomplish the impossible.

Ligature of the vas is, of course, the much publicized Steinach operation. The idea did not originate with Steinach but was proposed in 1903 by the French

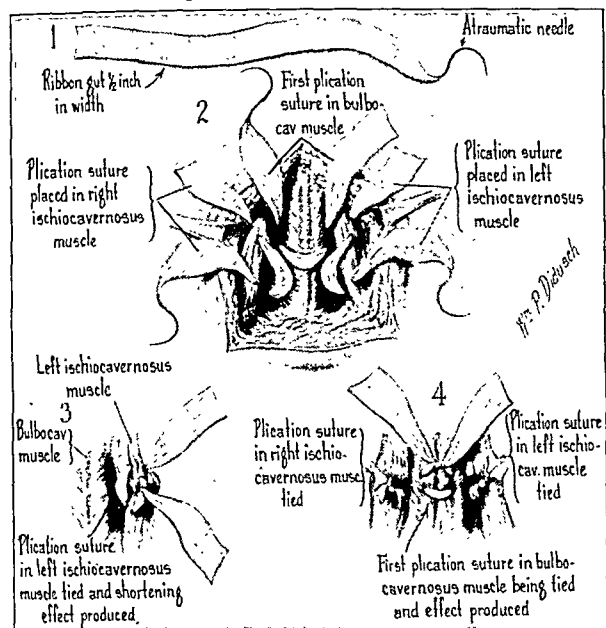


Fig. 3.—Operation for impotence: 1. Piece of ribbon gut, threaded on needle to be used in plication. 2. Method of placing the ribbon gut plication sutures in the bulbocavernosus and the ischiocavernosus muscles. 3. Shortening effect caused by plication suture in left ischiocavernosus muscle. 4. Plication sutures placed in right and left ischiocavernosus muscles and the tightening effect produced by placing plication suture in bulbocavernosus muscle.

scientists Ancel and Bouin, who noted that ligation of the vas in some of their experimental animals greatly enhanced sexual desire and that the interstitial cells of the testicle increased in number at the expense of the cells concerned in spermatogenesis. This suggested that shutting off the avenues of sperm formation would heighten production of the secretion especially concerned with sex desire; that is, the sex hormone as distinguished from the seminal fluid. Steinach carried his experiments much further and reported some wonderful returns of sexual power in bulls, in rams and later in human beings. Many, both here and abroad, followed his teachings.

Because ligation of the vas sometimes causes formation of a spermatocele, Sand and Tournade proposed a partial epididymectomy instead of the vas ligation. Several centimeters of the upper part of the epididymis was freed from the testicle proper without injuring the blood vessels, and the freed portion was resected between ligatures.

Comment is unnecessary regarding the advisability of employing the previously mentioned mechanical contrivances for encouraging and maintaining erection, or splinting a flaccid penis so that intromission might be accomplished in the absence of erection.

Huhner<sup>8</sup> has devoted a great deal of study to the relation of chronic inflammation and pathologic changes

in the prostatic urethra to sexual inefficiency and considers local treatment of the verumontanum, by irrigations and instillations, all important. Other authors have reported good results from treatment directed to the verumontanum.

For many years one of us has used subcutaneous injections of a specially prepared alcohol extract of gonads, adrenal and anterior pituitary in an attempt to boost the internal secretions of the patient, with many favorable responses.

Diathermy and hydrotherapy likewise have their ardent advocates. However, those who have obtained the best results through employment of these measures are unable to tell precisely whether the treatment actually did good of itself or was merely instrumental in changing the patient's psychic outlook. Wallace<sup>9</sup> found that a number of his "psychic cases" had four plus Wassermann reactions and that vigorous anti-syphilitic treatment resulted in complete recovery of some of the younger patients. In cases in which tertiary effects had caused definite nerve injury, no help was possible.

Perusal of the literature leads to the impression that the views of physicians and surgeons remain unchanged despite the introduction of new methods and advances

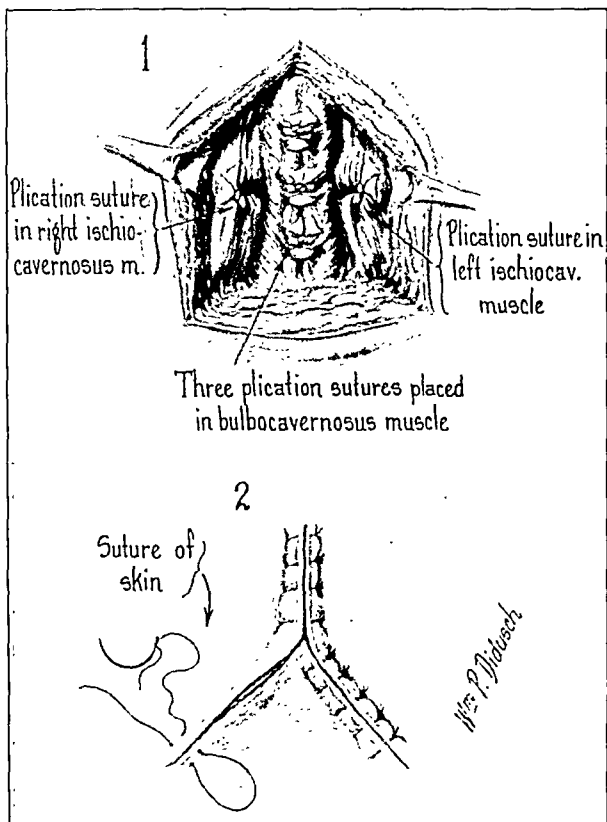


Fig. 4.—Operation for impotence: 1. All plication sutures placed and tied; shows the result produced by sutures. 2. Final skin closure.

in glandular therapy. The curable cases are largely psychic and dependent on some functional disturbance caused usually by masturbation or excessive sexual intercourse. That a few cases are curable by surgery seems well established; but the patients must be skillfully selected and operated on only after all palliative means have been exhausted.

8. Huhner, Max: Impotence in the Male: Its Practical and Scientific Treatment, M. J. & Rec. 119: 499 (May 21) 1924.

9. Wallace, W. J.: Impotency in Young Men: Etiology, Pathology and Treatment, J. Urol. 13: 193 (Feb.) 1925.

ANATOMICOPHYSIOLOGIC PROCESSES INVOLVED  
IN ERECTION

Regarding the anatomicophysiologic processes involved in the production of erection, Howell<sup>10</sup> says:

During this act [erection] the penis becomes hard and erect, owing to an engorgement with blood. The structure of the corpora cavernosa and corpus spongiosum is adapted to the function, being composed of relatively large spaces enclosed in trabeculae of connective and plain muscle tissue—the so-called erectile tissue. . . . Eckhard demonstrated the essential facts in the process. This investigator discovered that in the dog stimulation of the nervi erigentes causes erection. These nerves are composed of autonomic fibers arising from the sacral portion of the spinal cord. They arise from the sacral spine nerves, first to third [dog] on each side, and help to form the pelvic plexus. They contain vasodilator fibers to the penis, as well as to the rectum and anus, and also visceromotor fibers to the descending colon, rectum, and anus.

Eckhard,<sup>11</sup> Lovén<sup>12</sup> and others have shown that when these fibers are stimulated there is a large dilatation of the arterioles

This explanation of the act of erection, while no doubt correct so far as it goes, leaves undetermined the means by which the dilatation of the small arteries is produced. Vasodilator nerve fibers in general are assumed to produce a dilatation by inhibiting the peripheral tonicity of the arterial walls. If this explanation is applied to the case under consideration, it forces us to believe that throughout life, except for the very occasional acts of erection, the arteries in the penis are kept in a constant condition of active tone. Moreover, on this view we should expect that section of the vasoconstrictor fibers to the penis, by abolishing the tone of the arteries, would also cause erection. These constrictor fibers arise from the second to fifth lumbar spinal nerves, and reach the organ by way of the hypogastric nerve and plexus and the pudic nerve. No such result of their section is reported, and it seems that in the matter of erection the actual mechanism of the great dilatation caused by the nervi erigentes still contains some points that need investigation.

Marshall<sup>13</sup> says, in this connection:

The erection of the penis is brought about partly through the contraction of the ischiocavernosus (or erector penis) and bulbocavernosus muscles, certain of the fibers of which pass over the efferent vessels and so arrest the outward flow of blood. The result of this contraction is that whereas the blood can freely enter the dilated vascular spaces of the penis, its exit is retarded, while this leads to a further distention of the vessels, the venous outlets of which became still more compressed. Although the muscular penis mechanism unquestionably assists in the erection of the penis, it is equally clear that it is incapable by itself of causing that phenomenon, since erection can be induced by ligating the efferent veins. Moreover, the penis can be made to erect in animals in which the muscular mechanism has been paralyzed by the injection of curare, but the erection in such cases is incomplete.

Frank Hinman,<sup>14</sup> writing on the subject of priapism, agrees substantially with this opinion:

To this increased inflow in an erection is opposed a partial occlusion of the venous outflow. The efferent veins of the corpora cavernosa pass by way of each crus through the ischiocavernosus muscle, and that of the corpus spongiosum by way of the bulb through the bulbocavernosus muscle. The dorsal vein of the penis is the efferent outlet for the glans and has no constricting muscle other than intrinsic ones. These muscles are supplied by the pudic nerves and their contraction completes the act of erection by compression of these efferent veins which they surround, the occlusion not being complete, but enough to greatly increase the venous pressure in the erectile tissues. In addition to these special muscles there are smooth muscle fibers freely distributed throughout the spongy tissues of the penis, action of which, no doubt, has an intrinsic value in increasing venous pressure.

Henderson and Roepke<sup>15</sup> suggest that skeletal ischiocavernosus muscular contractions may play some minor part in erection of the penis.

Crawford and George,<sup>16</sup> in a series of experiments on dogs conducted with testicular injections, arrive at the conclusion that "1. There seems to be in the testes a specific dilator for the penis. 2. Agents which dilate the blood vessels of the hind limb increase to some extent the volume of the penis."

Carl J. Wiggers<sup>17</sup> expresses the opinion that the increased rigidity is due to the flooding of the cavernous spaces with blood as a result of the dilatation of their afferent arterioles. Compression of external veins by skeletal muscle contraction does not occur. He believes that secondarily the venous outflow from the efferent veins may be impeded, however, owing to compression from within against the rigid outer coat. Erection,

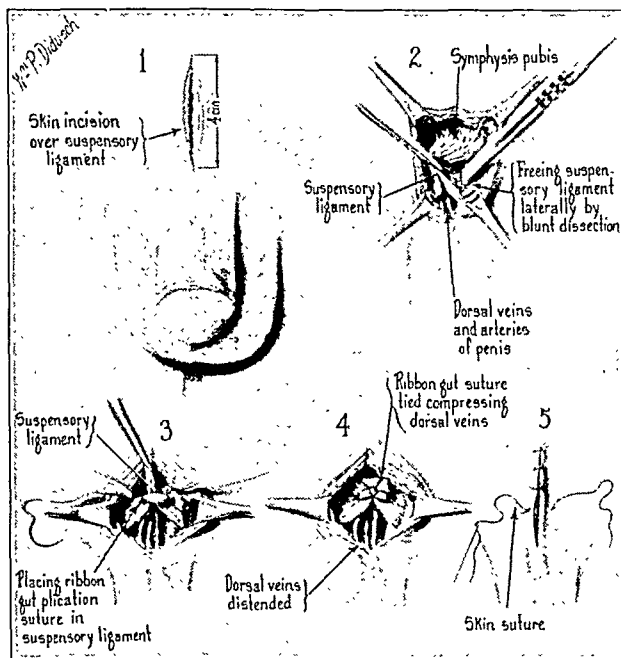


Fig. 5.—Operation for impotence: 1. Skin incision 4 cm. in length over suspensory ligament. 2. Shows blunt freeing of suspensory ligament laterally. 3. Placing ribbon gut suture to constrict suspensory ligament around vessels. 4. Ribbon gut suture tied, compressing dorsal veins. 5. Final skin closure.

in the erectile tissue of the penis and a greatly augmented blood flow to the organ. If the erectile tissue is cut or the dorsal vein is opened, the blood flow under usual conditions is a slow stream, but when the nervus erigens is stimulated the outflow is very greatly increased; according to Eckhard's measurements, eight to fifteen times more blood flows out of the organ. The act of erection is therefore due essentially to a vascular dilatation of the small arteries whereby the cavernous spaces become filled with blood under considerable pressure. The cavernous tissues are distended to the limits permitted by their tough fibrous wall. It seems probable that the turgidity or rigidity of the congested organ is completed by a partial occlusion of the venous outflow, which is effected by a compression of the efferent vein by means of the extrinsic muscles (ischiocavernosus and bulbocavernosus) and possibly by the intrinsic musculature as well. This compression does not occlude the blood flow completely, but serves to increase greatly the venous pressure.

10. Howell, W. H.: A Textbook of Physiology, ed. 12, Philadelphia, W. B. Saunders Company, 1933, pp. 1073-1074.

11. Eckhard: Untersuchungen über d. Erektion d. Penis beim Hunde, Beitr. z. Anat. u. Physiol. 3, 1863.

12. Lovén: Berichte über d. Verhandl. d. Königl. Sachs. Gesell. z. Leipzig, 8, 1866.

13. Marshall, F. H. A.: The Physiology of Reproduction, ed. 2, London, Longmans, Green & Co., 1922, pp. 262-267.

14. Hinman, Frank: Priapism, Ann. Surg. 60: 689-716, 1914.

15. Henderson, V. E., and Roepke, M. H.: The Mechanism of Erection, J. Physiol. 106: 441-448 (Nov.) 1933.

16. Crawford, A. C., and George, J. M.: The Testes and Certain Vasomotor Reactions of the Penis, J. Urol. 5: 89-118 (Feb.) 1921.

17. Wiggers, C. J.: Physiology in Health and Disease, Philadelphia, Lea & Febiger, 1934, p. 1092.

which occurs coincidentally, is not due to muscular action but is produced through a mechanical leverage action of the suspensory ligaments attached to the posterior portion of the cavernous tissue.

Samson Wright<sup>18</sup> does not mention the rôle of the ischiocavernosus or the bulbocavernosus muscles in connection with the causation of erection, nor does C. Lovatt Evans<sup>19</sup> in his revised edition of Starling's *Principles of Human Physiology*.

It is apparent, from a review of the literature, that later writers are less certain of the rôle of the ischiocavernosus and bulbocavernosus muscles in the production of erections. Our experimental work indicates that they are of great importance, but further experimentation must be done before definite conclusions can be drawn.

#### ANIMAL EXPERIMENTS

A series of animals was subjected to the operation which was later utilized in human beings for the purpose of determining whether ribbon gut gave the best results and whether tightening of the ischiocavernosus muscle on each side and the bulbocavernosus muscle increase the tendency toward erection. It was found that ribbon gut was successful in all cases tried and that ordinary catgut sutures were entirely unsuccessful for this purpose, the latter causing necrosis and defeating the purpose of the operation.

#### HUMAN CASES

The results on animals were so striking that a series of men were operated on with the following technic: The anesthesia may be either spinal or sacral.

The patient is placed on the operating table in an exaggerated lithotomy position, and a No. 20 French sound is passed into the urethra. An incision is made over the bulging part of the perineum, extending in the midline from a point about 10 cm. from the anal margin down toward that structure for about 5 cm. A branch is then made laterally on each side to a point just above the attachment of the crus penis, the completed incision resembling an inverted Y. The incision is deepened through fat and areolar tissue until the corpus spongiosum, surrounded by the bulbocavernosus, and the crus penis (corpus cavernosum) on each side, surrounded by the ischiocavernosus, are exposed.

Chronic ribbon gut, studded with an atraumatic needle, is inserted into the lateral edge of the muscularis bulbocavernosus, pulled across the belly of the muscle and passed through the other side, with just sufficient strain to plicate the muscle and produce the exact amount of pressure to reinforce any contraction necessary to aid in producing an erection. Two other similar stitches may be necessary to tighten the whole muscle. A figure-of-eight ribbon gut suture is inserted into the ischiocavernosus muscle on each side, care being taken not to injure or unduly compress the fairly numerous nerves and blood vessels in this area. By tightening the suture a reef is taken in the muscle, thus shortening it by approximately 1 inch (2.5 cm.). The wound is closed in layers without drainage.

#### MODIFICATION OF THE OPERATION

Owing to the fact that a few patients, three in number, were relieved of their impotence for a short time and then began to show deficiency again, it was discovered that the dorsal veins of the penis had widened, allowing the extensive collateral circulation to interfere

seriously with the stasis necessary for the production and maintenance of erection.

It was therefore decided to interfere with the collateral circulation on the dorsum of the organ. This was accomplished by inserting a ribbon gut ligature through each leaf of the suspensory ligament, and when this ligature is tied, compression is made on the vessels draining the dorsum of the penis, thus aiding in the necessary stasis instead of being a detriment to it.

This modification was so successful in relieving the three cases involved that it has now been adopted and utilized in every case.

A brief summary of the thirty-three cases in which operation was done is presented in the accompanying table.

#### TYPES OF CASES IN WHICH OPERATION SHOULD NOT BE DONE

It has been found that the muscles of men over 60 years of age are infiltrated with fat and for such cases this operation is not suitable. The most important and the largest number of cases of importance to

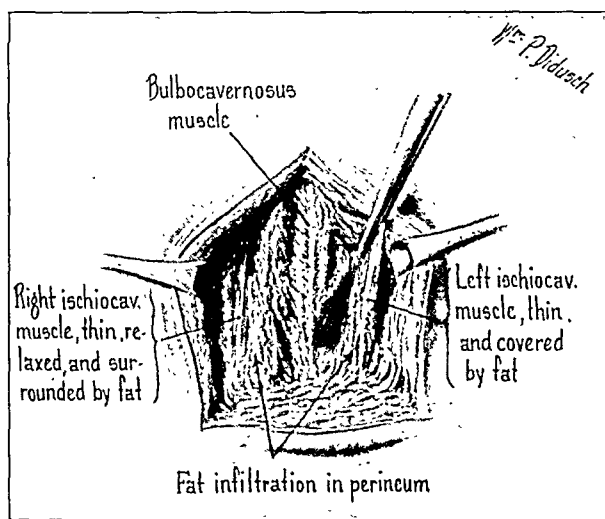


Fig. 6.—Condition present in perineum of an old man. The muscles are very thin and there is definite fat infiltration present.

be eliminated are those patients who are impotent from some psychic cause. Such patients should be treated by a neurologist.

Frequently men who are advancing in years begin to lose their sexual power, and such cases should be considered carefully before the operation is attempted. It is most important for the surgeon to determine the blood pressure of such men, as it is entirely possible for cerebral hemorrhage to accompany the violent exercise involved in sexual expression, if the patient's blood pressure is elevated or his blood vessels are diseased.

It has been found that the muscles of men over 60 years of age are rarely suitable for the performance of this operation because of the fact that they are often infiltrated with fat and do not have the proper resilience.

It is particularly important not to attempt this operation on any person who has a disturbance of the nervous system such as is found in tabes dorsalis or in any form of syphilis. Men who are suffering from premature senility should be excluded from the benefits of this operation because of the possibility of their getting into social complications as a result of being able to express themselves sexually.

18. Wright, Samson: *Applied Physiology*, ed. 3, London, Oxford University Press, 1929, pp. 123-124.

19. Starling's *Principles of Human Physiology*, edited, revised by C. L. Evans; ed. 6, London, J. & A. Churchill, 1933, p. 989.

## Results of Operation in Thirty-Three Cases

Case	Patient	Age	Last Erection	Last Normal Inter-course	Cause	Condition of Muscles	Post-operative Complications	Post-operative Days	First Post-operative Erection	First Postoperative Intercourse	Subsequent Experiences
1	D. P.	40	18 months	2½ years	Perineal fistula; seminal vesiculotomy 2½ years	Good	None	13	3 days	13 days	Regular and good; 7 times first 3 days; 4 times weekly to date
2	J. R.	31	3 years	3 years	Blow in left groin and penis	Good	None	9	5 days	30 days	3-4 times weekly; wife has recently given birth to a healthy baby girl
3	A. O.	38	19 years	19 years	Early excesses	Good	None	9	3 days	20 days	2 times weekly
4	H. L.	33	6 months	1 year	Early excesses	Good	Slight drainage	13	3 days	17 days	Satisfactory intercourse to date
5	S. H.	53	10 years	10 years	Advancing years	Fatty infiltration	Pneumonia; phlebitis; drainage	108	6 days	None, unmarried	Occasional erections
6	J. K.	39	5 months	6 months	Strain of muscles	Fair	None	6	2 days	24 days	Regular and satisfactory to date
7	P. K.	57	3 years	9 years	Perineal abscess nine years before	Moderate fatty infiltration	None	9	7 days	16 days	Fair
8	C. M.	42	5 years	5 years	Early excesses	Fair	None	7	3 days	21 days	Erections good; loses interest because of wife's delay
9	A. W.	42	3 years	3 years	Advancing years	Fair	Slight drainage	8	7 days	11 days	Many erections; premature; satisfactory of late; married recently
10	W. H.	63	20 years	20 years	Syphilis	Poor	Drainage	19	None	Unable to follow up	
11	H. H.	29	6 years	6 years	Weak musculature	Good	None	11	4 days	Unable to follow up	Satisfactory erections; single
12	J. D.	66	12 years	12 years	Old age	Fair	None	13	None	Unable to follow up	
13	L. S.	22	Present (semi)	2 years	Masturbation and sexual excess	Good	Inability to void; drainage	7	2 days	12 days	Many erections; entirely satisfactory intercourse; frequently
14	W. B.	65	4 years	4 years	Old age	Good for age	None	19	None	None	Not able to hold intercourse
15	M. M.	65	2 years	7 years	Prostatectomy 2 years; syphilis	Fair	None	9	None	None	
16	S. H.	28	Present (semi)	Never normal	Improper musculature	Good	Epididymitis; unable to void	21	7 days	.....	Occasional intercourse
17	S. H.	50	Present (semi)	Never normal	Advancing years	Fair	None	8	21 days	Right after plication	Satisfactory intercourse; recently married
18	J. C.	35	Present (semi)	4 years	Fall astride a picket fence at 6 years of age	Good	None	10	8 days	Right after plication	Plication of suspensory ligament done 5/1/36; regular intercourse
19	P. B.	34	Present (semi)	5 years	Early excesses	Good	Slight drainage	11	4 days	12 days	Good
20	J. B.	25	Present (semi)	5 years	Fracture of pelvis and rupture of bladder 5 years ago	Good	None	7	2 days	10 days	Many erections; entirely satisfactory intercourse frequently
21	I. R.	50	Present (semi)	20 years	Advancing age	Fair	Drainage; could not void	19	20 days	22 days	Good
22	D. O.	50	1 year	1 year	Advancing age	Poor	Could not void	16	8 days	Satisfactory erections	Plication of suspensory ligament 4/20/36
23	H. F.	25	Never complete	Never	Pollomyelitis at age of 15	Good	Could not void	19	9 days	None; engaged to be married	Frequent erections
24	P. B.	44	3 years	6 years	Early excesses	Good	Could not void	12	4 days	No intercourse	Good erections; plication of suspensory ligament done
25	S. M.	53	6 months	6 months	Advancing years	Good	None	14	10 days	Many erections	Plication of suspensory ligament done
26	M. C.	33	Present (semi)	2 years	Early excesses	Good	Could not void	11	6 days	No intercourse	Good erections; plication of suspensory ligament done
27	P. N.	47	1 year	2 years	Advancing years	Good	Could not void	22	2 days	40 days	Strong erections; normal intercourse
28	K. M.	38	Present (semi)	10 years	Poor musculature	Muscles infiltrated with fat	Could not void	15	12 days	Some erections	Plication of suspensory ligament done; good erections
29	N. S.	54	Present (semi)	12 years	Advancing age	Fair	Could not void	15	4 days	Many erections	Plication of suspensory ligament done; good erections
30	W. S.	51	1 year	5 years	Advancing age	Good	None	8	2 days	Frequent strong erections	Plication of suspensory ligament done; result perfect
31	A. L.	45	Present	16 years	Poor musculature	Poor	Could not void	14	None in hospital	34 days	Plication of suspensory ligament done; 5 times in 2 weeks
32	C. C.	48	10 years	10 years	Advancing age	Very good	Could not void	11	None in hospital	Occasional erections	Plication of suspensory ligament done
33	R. C.	46	1½ years	1½ years	Poor musculature	Ischiocavernosus good, bulbocavernosus poor	Could not void	9	None in hospital	Some erections	Plication of suspensory ligament done

NOTE.—Since this report was submitted, operations have been performed in eighteen additional cases. Some of these are too recent to report but for the most part the operations have been entirely satisfactory. The results are included in the summary but not in this table.

# SUMMARY AND CONCLUSIONS

1. Animal experiments indicate that ribbon gut is the best material for use in shortening the ischiocavernosus and bulbocavernosus muscles, as they do not cut through or cause necrosis, while the ordinary catgut does so.

2. Up to the time of publication, fifty-one men have been operated on by the method described in this communication; namely, by shortening the ischiocavernosus muscle on each side and plicating the bulbocavernosus muscle.

3. In order to accomplish the desired result, the operation must be skilfully performed, with just the right amount of shortening of the muscles. If the muscles are too tight, a constant painful erection will result; if not tight enough, satisfactory erections will not be produced.

4. The tightening of the two leaves of the suspensory ligament causes compression of the dorsal veins of the organ, thus aiding stasis and preventing collateral circulation developing to such an extent that it detracts from the success of the operation.

5. The success of the operation apparently depends on the use of ribbon gut, which does not tear through the delicate muscles as does ordinary twisted catgut.

6. Thirty-one of the fifty-one patients have been successfully relieved of their impotence. Of the eight unsuccessful cases, four were men over 63 years of age. Patient 10, aged 63, had had syphilis for twenty years, and a favorable result was neither expected nor obtained. Patient 12, aged 66, had been impotent for twelve years and was unimproved by the operation. Patient 8, C. M., was perfectly cured by the operation and was efficient for a period of about six weeks. Then he began to slump and has remained only partially efficient since. It is probable that the plication of the bulbocavernosus was not satisfactory, and we are planning to reoperate on this patient in an attempt to relieve the situation. Patient 14, aged 65, had been impotent for four years. No improvement resulted from the operation, although it was expected. Patient 15, aged 65, had a prostatectomy two years before and his last intercourse five years previous to that. He was unimproved by the operation. Three other cases failed for no apparent reason and eight are too recent to report.

7. It will therefore be seen that the aged men who have not profited by the operation have been those over 63 years of age; these have not been helped in any instance thus far. This may be a blessing in disguise, as the possibility of cerebral hemorrhage is not inconsiderable if men of this age are subjected to the increase in blood pressure coincident with the excessive exercise connected with sexual intercourse.

8. The most spectacular cures have been achieved in those rendered impotent by traumatic injuries to the perineum due to operation, rupture of the urethra by straddle injuries or other violence.

9. It is well to emphasize those cases in which this operation should not be attempted. These include patients with psychic impotence, persons who have had the nervous chain broken such as in cases of old syphilis, and patients of advanced age with high blood pressure.

10. There is nothing thus far to indicate that the relief will be other than permanent, although sufficient time has not elapsed for absolute certainty on this point.

899 Park Avenue—525 East Sixty-Eighth Street.

# TUBERCULOSIS OF THE SPINE AND SCOLIOSIS

## AN IMPROVED TECHNIC FOR ARTHRODESIS OF THE VERTEBRAL JOINTS

CHARLES S. YOUNG, M.D.

LOS ANGELES

There are several well known operative procedures that have been used for the purpose of creating ankylosis of the vertebral joints, but none have been entirely satisfactory. Such operations should result in the production of a solid bony mass about and enmeshing the posterior part of the neural arches and spinous processes of several adjoining vertebrae.

It is a well established fact that an arthrodesis results in healing and fusion of the vertebral bodies in most cases of spinal tuberculosis. Arthrodesis has also been performed for many years in scoliosis to stabilize a section of the spinal column after the greatest possible correction of severe lateral curvature. The problem has been to devise an operation that would have the following qualifications: first, application to all regions of the vertebral column; second, reasonable certainty of arthrodesis without the development of pseudarthroses; third, minimum surgical shock, especially when the patients are young children.

The most widely known operative technics used to produce ankylosis of the spine are those described by Hibbs and Albee.

The Hibbs<sup>1</sup> operation is known as an intra-articular arthrodesis because the lateral articulations are invaded. In this procedure the spinous processes, the laminae and the articular processes are exposed subperiosteally. The cartilage is removed from the lateral articulations with a curet. Small sections of bone are raised from each lamina with a gouge and mallet and used to span the space between the laminae. The spinous processes are cut and fractured with specially designed cutting forceps so that they will lie in contact each with the one inferior. The periosteum and muscles are sutured in place to cover the exposed bone. This operation has many advantages. However, it has three disadvantages which one must consider: First, the use of the gouge and mallet to raise bone from the laminae causes trauma to the spinal cord and central nervous system through the impulse transmitted hydrostatically by the spinal fluid. This is manifested by a sudden increase in the pulse rate, which continues during the remaining time of the operation. Second, in the operation for scoliosis with severe rotation it is not techni-

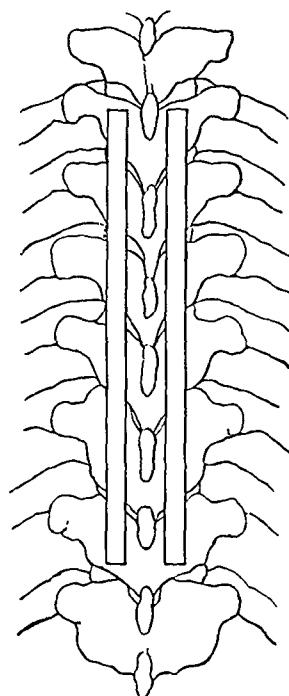


Fig. 1.—Osteoperiosteal transplants on bases of spinous processes and laminae, the periosteal surfaces of the grafts being directed posterolaterally.

1. Hibbs, R. A.: An Operation for Pott's Disease of the Spine, J. A. M. A. 59: 433-436 (Aug. 10) 1912.

cally possible to remove the cartilage from the articular processes on the deep side. Therefore the operation cannot be performed completely as designed. In these cases fusion may not be complete and relapse in the deformity can result. Third, vertebral bone does not proliferate to the same extent as the bone tissue of the long bones. It is possible for a pseudarthrosis to develop in the region of operation for this reason,



Fig. 2 (case 1).—Preoperative lateral view, which reveals destructive disease in second and third lumbar vertebrae.

although the lack of continuity of bone chips is another cause of pseudarthrosis. The Albee<sup>2</sup> operation is known as the extra-articular arthrodesis because the lateral articulations are not invaded. In this procedure a tibial graft is inlaid in the spinous processes to bridge the vertebrae. This operation is not so practical for children because of the relatively small bone structure in the spinous processes. In adolescents and adults the Albee operation is used to its best advantage in lumbar tuberculosis with small or no kyphosis. Lumbosacral, thoracic and cervical disease makes the full thickness tibial graft present serious technical and mechanical difficulties when one attempts to implant it in the spinous processes for the following reasons: First, the sacral spinous processes are too rudimentary to be bisected and form a broad raw bone surface for fusion with a graft. Second, the thoracic spinous processes when bisected present very narrow and thin surfaces for the reception of transplanted bone. Third, the cervical spinous processes are so small after bisection that the insertion of a tibial graft in them is not practicable. In the consideration of the Albee operation one must take into account the fact that the impulse of the broad chisel used to divide the spinous processes causes hydrostatic trauma to the central nervous system through the spinal fluid. The hammering of the full thickness tibial graft into the angle formed by bisection of the spinous processes, as practiced by some surgeons, produces more hydrostatic impulses in the spinal fluid, which are manifested by a rapid increase in the pulse rate, the latter being of considerable concern to the anesthetist.

During the past seven years I have been performing an arthrodesing spinal operation which seems to have measured up to the requirements that have been presented.

#### TECHNIC FOR TUBERCULOUS DISEASE

In tuberculous disease of the vertebrae, the operation is indicated when the diagnosis is made if the condition

of the patient is sufficiently good to withstand any major surgical procedure.

The patient lies in the semiprone position with a sand bag under one shoulder and under the corresponding side of the pelvis and hip. The incision when no kyphosis is present may be longitudinal over the tips of the spinous processes. When there is a kyphosis the incision should be crescentic, beginning at the midline superiorly and curving laterally to return to the midline inferiorly. Towels are applied to the skin edges with large skin clips. The skin and superficial fascia are reflected until the supraspinous ligaments are exposed. The latter are divided in their midline longitudinally to expose the tips of the spinous processes, which are denuded. The interspinous ligaments are also divided longitudinally and are reflected laterally with the muscles, which are separated subperiosteally from the spinous processes and laminae. If the line of cleavage is kept within the ligaments and between the periosteum and bone, there is little hemorrhage. This subperiosteal dissection is continued laterally to the capsules of the lateral articulations. The separation of all soft tissue from the spinous processes and the posterior surface of the laminae is imperative. It is difficult in the exposure to divide the interspinous ligaments and reflect them completely, but every particle of these ligaments remaining on the spinous processes should be excised or curetted away. The operation should extend at least two vertebrae above and two below the diseased area.

In the thoracic region, if there is a prominent kyphosis, the tips of the spinous processes making up the angulation should be excised to decrease the visible deformity.

For the excision of osteoperiosteal grafts, a straight longitudinal incision is made over the middle of the

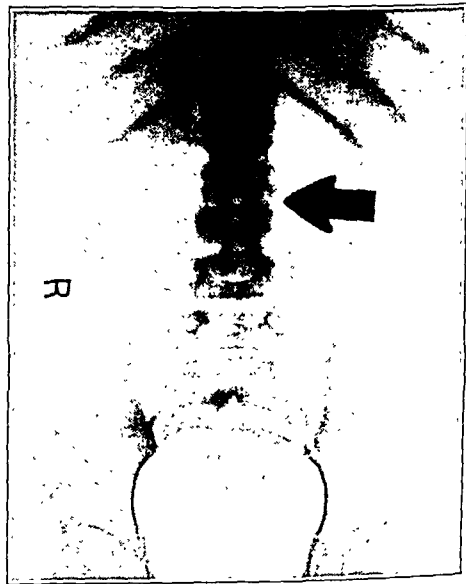


Fig. 3 (case 1).—Ten months after operation: healing and fusion of second and third lumbar vertebrae.

medial surface of the tibia after the application of a tourniquet. A curved incision may result in the division of the large saphenous vein unnecessarily. The superficial fascia is reflected, the shaft of the bone is exposed and the periosteum is incised by two parallel incisions outlining the medial surface of the bone for

2. Albee, F. H.: Transplantation of a Portion of the Tibia into the Spine for Pott's Disease, *J. A. M. A.* 57: 885-886 (Sept. 9) 1911.

the required length of the graft, which should be sufficiently long to extend the length of the exposed area on the vertebral column. The periosteum is divided further by another parallel incision midway between the other periosteal incisions. The outlined periosteum with a layer of cortical bone about 2 mm. in thickness is raised with a thin chisel or osteotome so that it can be removed in two linear sections, each



Fig. 4 (case 2).—Fifteen months after operation, showing healing and fusion of diseased vertebral bodies. Attention is called to proliferation of bone in region of spinous processes.

being half the width of the medial surface of the shaft at its narrowest part. The grafts should be bent between the folds of a towel moistened with physiologic solution of sodium chloride so that their cortical or raw surface will conform to the contour of the exposed vertebrae. After bending, each graft should be fitted (one on the right and the other on the left) so that its raw surface is in perfect contact with each lamina and base of spinous process (fig. 1). The periosteal surface of the grafts should be superficial.

The spinal periosteum, interspinous ligaments and muscles are sutured over these grafts to maintain them in position, deep interrupted sutures across each space between the spinous processes being used. For this purpose No. 3 chromic catgut is used in adolescents and adults, while No. 2 chromic catgut is used in children. A running suture of No. 1 chromic catgut in adults and No. 0 chromic catgut in children is used to unite the supraspinous ligaments and deep fascia.

In the lumbar and cervical regions, when there is a thick layer of subcutaneous fat, it is necessary to suture it with plain catgut. Closing of the skin and superficial fascia is made with vertical mattress sutures and running sutures of nonabsorbable material. Time can be saved in this operation by having the osteoperiosteal grafts excised from the tibia by an assistant, while the knee is held flexed 90 degrees.

Postoperative immobilization of the vertebrae is maintained by means of plaster-of-paris shells or body jackets. In cases of young children, plaster shells made and dried before the operation are used. The patient is strapped into either the anterior or the posterior shell to allow a change in position. For older children, adolescents and adults, Bradford frames are used until the stitches are removed. Then a plaster jacket is

applied with the patient on a canvas sling in the prone position. In lumbar disease the jacket should be extended to include the thighs. When there is a severe kyphosis a Bradford frame is unsuitable, so that immediately postoperative a firm bed with hard pillows is used until the stitches are removed, when a well padded plaster jacket can be applied.

Recumbency should be maintained for a period of from three to six months, the time being determined by the degree of healing revealed by roentgenograms. A back brace is applied following the plaster jacket and is worn for from six to nine months, this time also being determined by the healing shown in roentgenograms. During the entire period of convalescence the patients are required to include in their diet or take medicinally a sufficient quantity of calcium, phosphorus and vitamin D in order that there may be no deficiency of bone-forming essentials.

#### SCOLIOSIS

I have performed this vertebral arthrodesis on a few scoliosis patients. The proliferation of bone that followed the operation, and the stability of the fused section of the spinal column, were very gratifying. The operative technic was the same as for tuberculosis of the vertebrae. However, in two cases of extreme rotation of the vertebrae in the lumbar region it was possible to use only one wide graft. The latter was placed on the laminae and bases of the spinous processes of the superficial side. In these severe rotation cases a partial exposure of the spinous processes on the deep side was necessary in order to facilitate the longitudinal division of the interspinous ligaments.

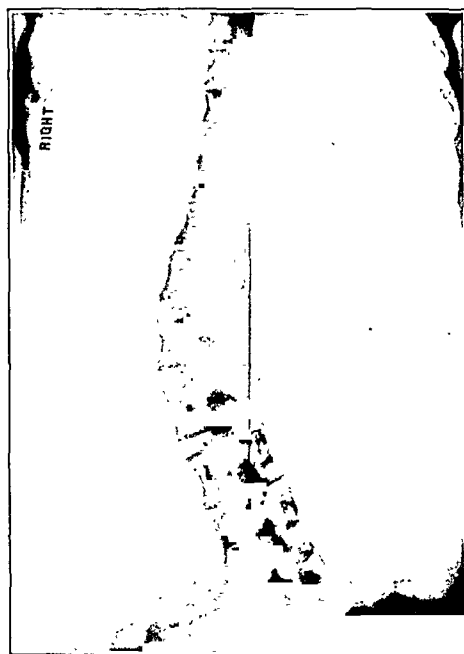


Fig. 5 (case 3).—Right thoracolumbar structural scoliosis.

Postoperative immobilization of the scoliosis patients was maintained by head and pelvic traction and by plaster turnbuckle jackets for periods varying from four to six months. Supporting apparatus consisting of back braces and corset braces was used for the following six to eight months.

## COMMENT

The extensive proliferation of bone, to produce ankylosis of a section of the vertebral column following osteoperiosteal transplantation as described, is dependent on Wolff's law. The latter is illustrated particularly in one case of scoliosis with extreme rotation, in which newly formed bone stands out in relief in the roentgenogram. The shadow appears in total density to be greater than all the other contiguous bone structures in the vertebral column (fig. 7).

It is reasonable to believe that this arthrodesis is dependent largely on a very thorough subligamentous and subperiosteal exposure of the posterior part of the neural arches and careful fitting of the osteoperiosteal grafts, so that the raw surfaces of the latter are in broad contact with the raw surfaces of the laminae and bases of the spinous processes. A combination of this operation with bone chips from the laminae and imbrication

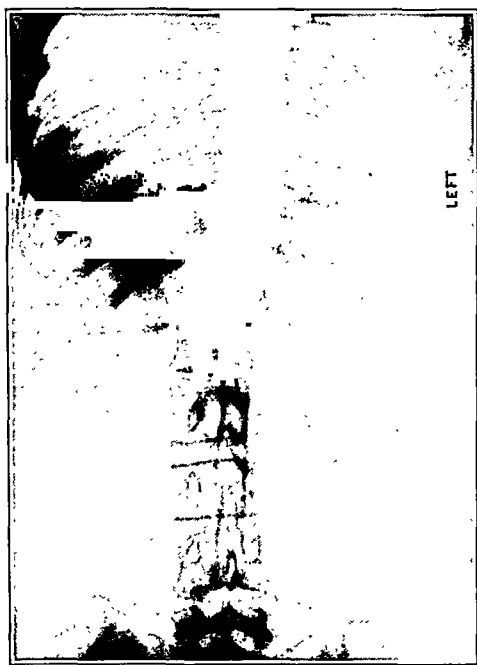


Fig. 6 (case 3).—Five and one-half months after operation.

cation of the spinous processes will lead to fusion in most cases, but it makes the operation unnecessarily complex and the rationale is changed.

With regard to instruments used, I found that the conventional periosteal elevators in general use were unsatisfactory for subligamentous and subperiosteal exposure of the vertebrae. The handles were concave or too small, so that the hand and forearm muscles of the surgeon became cramped in the tedious dissection. An elevator with a large convex handle and a sharp elevator edge for adults and a dull rounded edge for children was designed to obviate this difficulty.

## STATISTICS

Feb. 1, 1936, there were seven cases of tuberculosis of the vertebrae in which more than one year had elapsed since operation. Of this group the first operation was performed Sept. 16, 1930, and the last Jan. 3, 1935, so that sufficient time has elapsed to make a fair estimation of results. The youngest patient was 2 years and the oldest 47 years of age. Originally it was considered that the osteoperiosteal grafts would be pliable for accurate fitting in children and adolescents only.

However, in the two adults, thin grafts were removed from the tibia with little splintering, so that they could be bent to approximate the curve required. All the tuberculosis patients had an uneventful convalescence. Healing has resulted in the effected vertebral bodies, and ankylosis has occurred in the section of the vertebral column on which the operation was performed. One patient, a girl of 5 years, with extensive destruction of the bodies of five thoracic vertebrae, a tuberculous abscess and a severe kyphosis, has an arthrodesis extending from the fifth thoracic to the first lumbar vertebrae. Subsequent to the operation, Aug. 22, 1931, there was progressive fusion of the remaining portions of the diseased vertebral bodies and a proliferation of bone from the transplants as revealed by roentgenograms. The patient became clinically well excepting for the deformity and hyperactive knee jerks, which were present prior to the arthrodesis. As there were no symptoms the mother of the child did not consider it necessary to bring the latter in for observation for a period of more than fifteen months. The parents noticed that there was a rapid increase in the deformity a few weeks prior to readmittance. Roentgenograms revealed a new destructive lesion in the fourth thoracic vertebra, which was superior to the preceding disease in the lower thoracic vertebrae. A second operation was performed May 22, 1936. The site of the first operation was exposed in its superior part and a large mass of dense bone was found to enmesh and fuse with the spinous processes and laminae. The operation was extended superiorly to include three more vertebrae. Osteoperiosteal transplants were placed on the bases of the spinous processes and laminae. Inferiorly the grafts were inserted under the reflected periosteum of the bone mass which resulted from the first operation.

Feb. 1, 1936, there were six cases of scoliosis in which operation had been performed more than three years before. These patients were adolescents. There was one case of rachitic scoliosis, two of developmental structural scoliosis, and three cases caused by anterior poliomyelitis. This group of patients had no postoperative complications, and fusion resulted so that there is good stability of the vertebral column in each case.

## REPORT OF CASES

Only four case reports are given, because this number will serve to illustrate the types of patients on whom the operation has been performed.

CASE 1 (figs. 2 and 3).—A. T., a Japanese boy, aged 6 years, admitted Dec. 27, 1927, had a kyphosis with the apex of the angulation at the spinous process of the second lumbar vertebra. The thorax leaned toward the left, so that the patient had difficulty in maintaining his equilibrium when walking. The sacrospinalis muscles in the thoracic and lumbar regions were in a state of spasm. There was a limitation of movement in the dorsolumbar region of the vertebral column. The Pirquet reaction was positive.

Roentgenograms showed a destructive process in the bodies of the second and third lumbar vertebrae and a narrowing of the intervertebral space. In the anteroposterior view the second lumbar vertebra was tilted downward on the left and the destructive process appeared more advanced in it and the cartilage inferior to it.

The diagnosis was tuberculosis of second and third lumbar vertebrae.

Recumbency on plaster shells was instituted primarily, because the mother of the patient refused consent for an arthrodesis. Fusion of the vertebral bodies did not occur after nearly three years, although the disease did not make any definite progress during this time.

Sept. 16, 1930, an arthrodesis was performed by implantation of a tibial osteoperiosteal graft on each side of the bases of the

spinous processes and laminae from the twelfth thoracic to the fifth lumbar vertebrae. Sept. 24, 1931, one year later, the patient from a clinical standpoint had made a complete recovery with the exception of the loss of spinal movement between the fused vertebrae. The kyphosis deformity had not increased and the lateral deviation of the thorax had been overcome. The boy went to Japan in 1932 to receive his education there. In a communication from the family physician May 12, 1936, the latter reported that there has been no relapse and that the patient is clinically well.

CASE 2 (fig. 4).—G. C., a man, aged 41, admitted Dec. 19, 1934, had a kyphosis with the apex of the angulation at the spinous process of the eleventh thoracic vertebra. The sacrospinalis muscles in the thoracic and lumbar regions were in a state of spasm. Movement in the dorsolumbar region of the vertebral column was very restricted in its range. Roentgenograms showed a destructive process with wedging of the eleventh thoracic vertebral body with an almost complete loss of the intervertebral spaces between the tenth and eleventh and the eleventh and twelfth thoracic vertebrae. There was an

esses and laminae from the ninth thoracic to the third sacral segment. Sept. 16, 1933, the turnbuckle jacket was removed, ten months after the operation. The scoliosis was not apparent on physical examination, although the angulation of the ribs on the right side detracted from the appearance of the back and the improved alinement of the vertebrae.

CASE 4 (fig. 7).—A. G., a school boy, aged 14 years, admitted July 19, 1929, had a flaccid paralysis, partial or total, of the muscles of the back, the abdomen and the lower extremities. The back showed a severe left thoracic and a right thoracolumbar scoliosis. The scoliosis was so extreme that the costal margin impinged on the pelvis in the standing or sitting position. The thorax was badly deformed, with extreme angulation of the ribs on the left side. There was severe paralytic involvement of both lower extremities, the right being practically a dangle leg. Other surgeons had previously performed stabilizing operations on both feet and a fusion operation on the thoracic spine.

The diagnosis was anterior poliomyelitis; left thoracic, right thoracolumbar scoliosis.

July 24, 1929, an arthrodesis was performed by implantation of an osteoperiosteal tibial graft on the superficial side of the laminae and spinous processes from the twelfth thoracic to the fifth lumbar vertebrae inclusive. The operation was not preceded by corrective measures to diminish the thoracolumbar curve on account of the previously fused thoracic vertebrae, the extreme deformity of the thorax and the severe rotation of the lumbar vertebrae. It was believed that the separation of the spinal ligaments and postoperative head and pelvis traction, which was applied, would lead to all the practical correction of the scoliosis that was possible. The brace was removed April 22, 1930, approximately nine months after the operation. The stability of the spine was such that there was no pain or sense of weakness in the back. When the last inspection of this patient was made on March 19, 1936, he was employed. In the follow-up roentgenogram of Dec. 26, 1935 (fig. 7) the thoracic scoliosis at the site of the first arthrodesis showed a relapse, while in the thoracolumbar region there was revealed a dense mass of bone which obviously prevented any increase in the deformity.

#### CONCLUSIONS

1. An arthrodesis of adjoining vertebrae can be performed by transplantation of long flexible osteoperiosteal grafts from the tibia to the laminae and bases of the spinous processes.
2. This operation has resulted in healing and fusion of vertebrae in which there was a tuberculous osteitis (Pott's disease).
3. After the greatest possible correction of the deformity in scoliosis, a section of the vertebral column can be stabilized by this operation to prevent relapse and to make the use of braces and supporting apparatus unnecessary.

2417 South Hope Street.

**Artificial Insemination.**—There has been, from time to time, a good deal of unfortunate newspaper discussion on the subject of artificial insemination and "test-tube babies." Many women have gotten the impression that the method is of frequent value in the treatment of sterility. This is not the case. In normal intercourse the sperm is deposited in the immediate vicinity of the mouth of the womb, and the spermatozoa quickly enter the uterus. At times, however, the secretions or discharges of the canal may make this difficult, so that it is conceivable that in the rare case the injection of the sperm into the uterine cavity with a syringe would give a better chance of pregnancy. In cases of male sterility—and these furnish the chief excuse for artificial insemination—there is no doubt that the method is of at least some value, for without it the chances of the woman are nil unless she sacrifices her marriage vows. If a woman thinks, however, that a single test-tube insemination is sure to result in conception, she will practically always be sadly fooled.—Novak, Emil: *The Woman Asks the Doctor*, Baltimore, Williams and Wilkins Company, 1935.

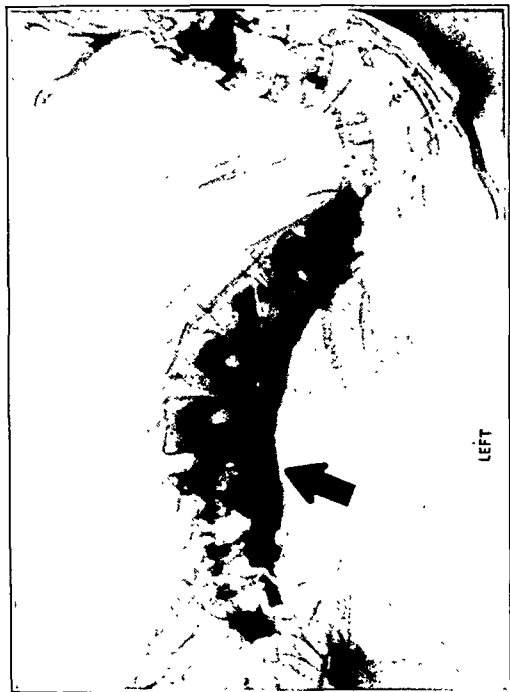


Fig. 7 (case 4).—Six years after osteoperiosteal transplantation in thoracolumbar region. Attention is called to dense mass of proliferated bone. Relapse in curvature of thoracic region where first operation was performed.

invasion of the destructive process into the bodies of the tenth and twelfth thoracic bodies. A shadow indicating considerable perivertebral thickening was present in the anteroposterior view.

The diagnosis was tuberculosis of the tenth, eleventh and twelfth thoracic vertebrae.

Jan. 3, 1935, an arthrodesis was done by implantation of an osteoperiosteal graft on the bases of the spinous processes and laminae from the seventh thoracic to the third lumbar vertebrae. Jan. 3, 1936, the section of the vertebral column at the site of the operation was ankylosed. There was no spasm of the sacrospinalis muscles. The patient was clinically well and had returned to his occupation.

CASE 3 (figs. 5 and 6).—D. S., aged 14 years, admitted July 26, 1932, had a right structural dorsolumbar scoliosis with extensive rotation. There was an angulation of the ribs posterior on the right side. The right scapula was elevated and abducted. Limitation of right lateral bending of the trunk was present. An anteroposterior roentgenogram showed a right thoracolumbar scoliosis.

The diagnosis was right thoracolumbar scoliosis.

July 26, 1932, an arthrodesis was done by implantation of tibial osteoperiosteal grafts on the bases of the spinous proc-

## GENERAL ACQUIRED ANHIDROSIS

REPORT OF A CASE AND INVESTIGATIONS OF THE  
HEAT REGULATION AND CIRCULATION

MOGENS FOG, M.D.

COPENHAGEN

A total disappearance of the ability to perspire is rarely seen. The sporadic and familial cases of general anhidrosis that have been reported in the past (Quilford,<sup>1</sup> Loewy and Wechselsmann, Richardson,<sup>2</sup> Tannhauser<sup>3</sup> and others) resulted from a congenital and general developmental anomaly of the dermic organ; i. e., an ectodermal dysplasia.

Nowhere in the medical literature, however, have I been able to find a description of a case such as the one cited here; i. e., in which cessation of the function of sweating occurred in a person who had previously been perfectly normal in this respect. A case of this sort gives rise not only to diagnostic observations and examinations but also to a number of pathophysiologic ones, which, among other things, serve to throw light on the normal function of perspiration.



Fig. 1.—Biopsy. Skin from the axillary region. Apocrine glands with low cubical epithelial cells. Stained by hematoxylin-eosin.

## REPORT OF CASE

**History.**—A man, aged 25, a patient in the Rigs Hospital, department B, from July 26 to Nov. 9, 1933, was the fifth of six siblings. The family was well, with no history of sweat disturbances, ectodermal dysplasia or metabolic or nervous diseases.

The patient had had pneumonia in infancy and later the common diseases of childhood. At 17 he was treated for coxa vara traumatica sinistra with osteotomia subtrochanterica. There have been no symptoms from the extremities since.

At 21, in 1927, the patient contracted an acute febrile disease thought to be common influenza with blepharitis. After spending twelve days in the hospital he resumed work, although he did not feel well. Several times during the next two months his temperature rose, reaching 39 C. (102 F.) in the evening. At the beginning of April he was compelled to go to bed with a temperature of 41 C. (105.8 F.). He was extremely ill and during the course of the next few days he developed edema of the pharynx, face and hands, and a red spotted exanthem appeared over the entire body. The latter soon disappeared. For a fortnight he had a high fever and was drowsy, although he did not display typical somnolence, diplopia, cervical rigidity

or severe headache. Figure 4 shows the temperature curve of this period and the subsequent months. Following a severe nasal hemorrhage the patient improved, but nevertheless he remained in bed for many weeks. There were occasional recurrences of slight temperature elevation. There were no abscesses or exanthema but the patient's skin peeled off and all his hair fell out.

In June he again had fever accompanied by diarrhea. Widal's reaction on the serum, which had previously been negative, was now positive, thus determining the presence of paratyphoid fever. The urine and feces, however, reacted negatively.



Fig. 2.—Preparation as in figure 3. Cystic degeneration of apocrine glands. Below, normal eccrine glands.

During the course of the summer the patient's general condition improved and in August he returned to his post as clerk in a grocery shop.

In September he attended a football match in the blazing sun and suddenly become indisposed. He had a sensation of pressure above the precordia, and his face, which was greatly congested, felt burning hot. For the first time he noticed that he was not perspiring anywhere on his body.



Fig. 3.—Preparation as in figure 3. General view showing apocrine glands in varying degrees of degeneration. Normal eccrine glands.

Since then the patient has never sweated. He maintains that previously, when it was warm or when he was working, he perspired quite normally, at times even excessively. This also applies to his long febrile illness.

His condition since September 1927 proved to be very troublesome and he not only had to alter his way of living considerably but also felt himself in danger of having to give up his work.

His chief complaint was of attacks similar to that suffered when he first discovered the nature of his illness. When he walks rapidly, especially in the sun, or engages in manual labor, he becomes indisposed. Particularly his face, but also the rest of his body, feels overheated; he has dull pain in the

Read before the Danish Neurologic Association in September 1933.

Translated from the Danish by Elsie-Marie Werner Kornerup, A.B. From the Rigs Hospital, Department B (physician in chief, Prof. Erik Warburg, M.D.).

1. Quilford, S. H.: *Wien. med. Wchnschr.* 33: 1116, 1883.

2. Richardson, H. B.: *J. Biol. Chem.* 37: 397 (Feb.) 1926.

3. Tannhauser, S. J.: *Hereditary Ectodermal Dysplasia of the "Anhydrotic Type,"* *J. A. M. A.* 106: 908 (March 14) 1936.

precordia, palpitation, dyspnea and often painful paresthesias in the face and the peripheral parts of the extremities. Frequently the attacks do not come on until he has stopped working or has come to a cool place. The symptoms, including the dyspnea, may then last for as long as an hour. He is quite exhausted after these attacks and is unable to resume work. During a short febrile illness in 1932 he felt much worse when his temperature was between 38 and 39 C. (100.4 and 102 F.) than previously when he had suffered identical temperature elevations. He noticed that the discomforts which he experienced usually made themselves manifest just after meals and during periods when he ate heavy and extremely "nourishing" food.

Besides the permanent absence of sweat secretion, the patient complains that his skin has become dry and scaly. This is especially true of his face, and he has to use cold cream two or three times a day.

He has always been inclined to become fat, but during his illness in 1927 he lost considerable weight. Since then, however, he has again gained 11 Kg. (24½ pounds).

The hair on his head, which fell out during the febrile period, has largely grown in again.

Except for some months in 1929, when he suffered from insomnia that did not respond to ordinary hypnotics, he has always been normal with regard to sleep.

Evacuation, urination and digestion show no abnormalities. Likewise his lacrimal and salivary secretion is normal. During the attacks, however, there is often a profuse thin secretion from the nose. Sexual desire and sexual life, as well as his mental state, are said to be normal.

As previously mentioned, since the onset of the anhidrosis the patient has had to make a number of adjustments in his way of living. He usually keeps quiet, walking slowly and preferably not at all on warm days, when a quarter of an hour's walk is enough to call forth the discomforts described. He does not do much bicycling; he no longer dances, and he is unable to do his full share of work. In the beginning of the summer of 1933 he felt quite incapable of working and was therefore admitted to the hospital.

**Clinical Examination.**—Psychiatric: Mentally the patient is intelligent. He possesses excellent understanding of his condition and has the ability to observe it. He has emotional stability.

**Somatic:** The patient is well proportioned with no symptoms of endocrinologic abnormalities. His weight is above average, 74.4 Kg. (163.6 pounds) and his height 164 cm. (5 feet 5 inches). The layer of subcutaneous fat tissue is particularly thick on the thorax and mammae; the extremities are normal, yet the wrists, hands and feet are exceptionally small, in fact, almost feminine (fig. 5).

The thyroid gland is normal. The rectal temperature is normal.

The hair on the head is thin as in seborrhea; the axillary and pubic hair is normal. Especially on the face and extremities the skin is very dry and scaly but without myxedematous changes.

Encircling the abdomen and lumbar region is seen a segmental, clearly defined stripe of brown pigmentation. This is presumably congenital. (A sister is said to have the same anomaly.)

Clinical, roentgenologic and electrocardiographic examinations of the heart showed nothing abnormal. The lungs are likewise normal.

X-ray examination of the pituitary region is negative.

**Neurologic Examination.**—Pupillary reaction, optic movements and other functions of the cranial nerves are normal. Tone, strength, coordination, superficial and deep sensibility, as well as reflexes, are normal in the extremities; the Babinski phenomenon is absent; the gait is free; there is no tremor, oligomimicry or bradykinesia.

The naso-ocular reflex (Wernöe), pilomotor reflex and spontaneous vasomotor reactions (flushing and blanching) are normal; there is lively dermatographism with urticarial reaction.

**Laboratory Examinations.**—There were no pathologic elements in the urine; diuresis was increased, averaging 2,000 cc. (measured for forty-two days, minimum 1,400 cc., maximum 2,600 cc.); the concentration was correspondingly low. Hemo-

globin was 88 per cent, the sedimentation rate 5 mm. an hour. The Wassermann reaction was negative; blood pressure 130 systolic, 90 diastolic. The basal metabolism was from 98 to 92 per cent (Benedict). The spinal fluid was bloody, with a normal protein content and a negative Wassermann reaction. Ewald's test meal: quantity 113 cc., congo 42, phenolphthalein 50.

**Summary.**—A man, aged 27, had at the age of 21 a long febrile disease (paratyphoid fever). Since then he has not been able to perspire and under circumstances in which sweat secretion usually appears (heat, fever, work) he gets attacks of indisposition, precordial pain, palpitation, dyspnea and congestion. There is no objective sign of organic nervous disorder or metabolic disease. The patient's skin is dry and scaly but otherwise shows nothing abnormal. The heart is seen to be normal. Diuresis is increased.

It is not unusual to come across patients who maintain that they "cannot perspire." Closer investigation of these cases reveals, however, that the secretion is present although reduced.

Therefore the first task in a case such as I have described is to verify the patient's statement that he is incapable of perspiring under all circumstances. With this purpose in mind the following experiments were carried out:

**Artificially Produced Fever.**—A preparation of sulfur and olive oil was injected intramuscularly (first day, 0.5 cc.; second day, 1 cc.). The rectal temperature rose to a maximum of

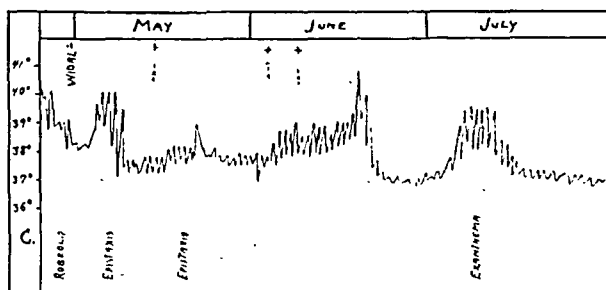


Fig. 4.—Temperature curve during illness of patient in 1927 and subsequent months.

38.1 C.; i. e., the same reaction as is seen in healthy persons. The skin temperature graded on the feet went up from an average of 32.9 C. (91.2 F.) to 34.2 C. (93.5 F.).

There was great congestion and the patient did not feel well. No sweat secretion was seen.

**Exposure to High Exterior Temperature.**—The patient's body and extremities were placed in a heating chest in which the initial temperature was 35 C. (95 F.), rising in the course of ten minutes to 50 C. (122 F.). From the very start he felt distressed; he became more and more congested and at the end of nineteen minutes the experiment had to be interrupted, as he was exceedingly ill with dyspnea, small, weak and rapid pulse, and râles on the posterior surfaces of both lungs. His skin was scarlet but without a drop of perspiration. He recovered very slowly. By mistake the patient's temperature was not taken. Clinically the condition had to be designated "cardiac insufficiency."

**Administration of Pilocarpine.**—One milligram of pilocarpine hydrochloride was injected intravenously. This caused a slight congestion of the face and subjective sensation of warmth but no sweat secretion. Thereupon 5 mg. of pilocarpine was injected, producing more pronounced vasomotor reaction and profuse salivation, but not a trace of secretion from the skin.

These investigations permitted me to conclude that the patient was right in saying that his sweat secretion had disappeared. Moreover, the experiment in the heating chest had given a good idea of the serious symptoms that were capable of developing in this patient. He maintains that he has been just as ill as in the heating chest twice since the onset of his illness, but that since

then he has avoided subjecting himself to conditions that might possibly bring on such a severe attack.

In view of the length of time the patient's illness has lasted (six years) it was deemed desirable to find out to what degree the sweat glands in his skin were present or had undergone regressive changes. The decided symptoms from the skin which were present during the patient's acute illness (exanthem, peeling and loss of hair) suggested the possibility of a primary disorder of the dermic glands themselves. Because of this a biopsy of the axillary skin was undertaken.

**Histologic Examination** (Dr. Sven Christiansen).—The epidermis and papillae were normally developed. Numerous lumens of sweat glands were seen in the corium (figs. 1, 2 and 3). About one half of these had the structure characteristic of normal apocrine glands; i. e., the cavity was covered with epithelial cells varying from low cubical to cylindric ones. The

latter had tongue-shaped shoots of protoplasm projecting into the lumen, where, in addition, fragments of discarded protoplasm were to be found. The rest of the glands proved to be abnormal. They were nearly cystic hollows, covered with absolutely flat cells, only the nuclei of which were clearly visible. The iron test (Tirmann and Schmelzer's method) showed only a trace of iron in the first group of cells described and none in the second.

The eccrine glands revealed nothing abnormal.

Thus it is seen that the histologic picture shows reduced function of the still existing glands and advanced degeneration of the rest. It is interesting to note in this connection that pilocarpine did not succeed in provoking secretion of the glands, in spite of the fact that about one half



Fig. 5.—Appearance of patient at time of examination.

of these were found to be morphologically normal. This seems to confirm Müller's<sup>4</sup> statement that the effect of pilocarpine on perspiration disappears after the interruption of innervation.

At the same time the result of the histologic examination directs attention to a consideration of the localization of the disorder. As I mentioned at the beginning of this account, in the previously reported cases of general anhidrosis there were general developmental anomalies in the skin, one of which was a complete lack of normal sudoriferous glands.

In my patient it is found that the secretion of sweat ceased despite the fact that a large number of the glands are still present. It must be regarded as indisputable that the origin of his disease must be sought in the septic condition in which he found himself in 1927 and which doubtless affected the innervators of the sweat glands. The general nature of the disease indicates that the disorder is not to be sought in the peripheral

neuron, the sympathetic nerves or the ganglions in the sympathetic trunk. Furthermore, the elective lesion of the glandular nerves, without the vasomotor nerves of the skin also suffering and likewise the partial degeneration of the glands themselves, argues against such localization.

In the central nervous system sweat innervation is represented by centers in the lateral horn of the medulla spinalis, in the medulla oblongata and in the cerebrum. The elective but nevertheless general extent of the disease does not speak in favor of spinal localization; the contrary, attention is focused on those centers of sweat secretion which have been shown to be related to the heat regulation center in the cinereum (Isenschmid,<sup>5</sup> Dieden,<sup>6</sup> and others). However, peculiar that a cerebral disorder should cause a total and permanent cessation of the function of perspiration. In transverse lesions of the spinal cord in both man<sup>7</sup> and animals<sup>8</sup> the secretion was seen to return in from twenty-five to seventy-five days after the trauma. Only one case has been reported<sup>9</sup> in which a lesion such as this produced permanent cessation of sweat in the regions affected.

I realized that my assumption that the patient's pathologic condition was localized to the hypothalamic center would be confirmed if it were possible to show symptoms of a related disorder of other functions attributed to the activity of the hypothalamic cerebral regions.

In spite of widespread experimental and clinical experience there are, as yet, very few morbid phenomena to which, in this respect, one can ascribe local diagnostic worth. It cannot be said that my patient displays any such pronounced symptoms. His moderate adiposity might be explained by the sedentary life that he has been compelled to lead for a number of years. His diuresis is increased—it is about 2,000 Gm. of urine daily and the specific gravity is correspondingly low. This may possibly be interpreted as an indication of a lesion of the tuber cinereum, since the disappearance of the sweat secretion cannot be assumed to influence the diuresis during confinement to bed, consumption of ordinary fare and existence under everyday living conditions.

The cutaneous insensible perspiration, which constitutes about 30 per cent of the total water excretion of the organism, must be interpreted simply as a physical process of evaporation which is independent of the function of the sweat glands and therefore in this case scarcely compromised. The increase in the diuresis is, however, too slight to permit one to consider the presence of a manifest diabetes insipidus. Furthermore, observation of the patient thus far has given me no reason to believe that there was anything wrong with the heat regulation. His body temperature was normal and showed the usual daily rhythmic fluctuations. Following injection of a preparation of sulfur and olive oil, his temperature rose just as much as a normal person's does after the same dose. Yet, notwithstanding this, a closer investigation of the patient's heat regulation was considered desirable—not for local diagnostic reasons but for pathophysiologic ones. A case such as the foregoing serves to throw light on the significance

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of cutaneous secretion of water in maintaining normal bodily temperature during increased heat production in the organism.

Before I describe the other experiments to which the patient was subjected I shall call to mind the various factors pertaining to heat regulation.

Chemical heat regulation sets in particularly under circumstances in which the exterior temperature is

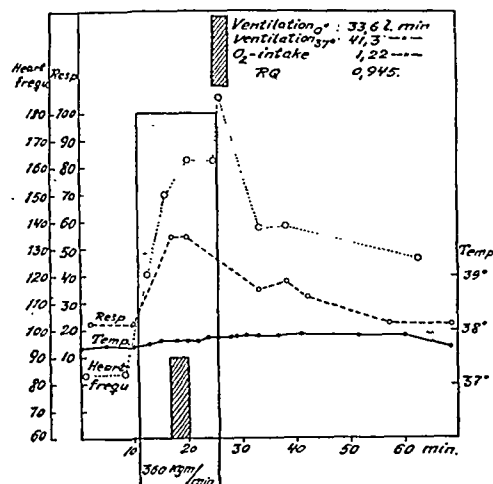


Fig. 6.—Experiment 1: Patient dressed, without ventilator.

reduced, i. e., when there is greater heat production in the body. This is accomplished by muscular contraction and more specific metabolic increase.

Physical heat regulation exercises its action through variations in the amount of heat given off by the body. This takes place in various ways: (a) through radiation from the surface of the skin, (b) through conduction and heat currents from the surface of the skin, (c) through evaporation from the lungs and skin, (d) through warming of ingested food and inspired air.

A nude person lying in a horizontal position gives off heat according to the following approximate figures: radiation, 70 per cent; conduction and currents, 5 per cent; evaporation through the lungs, 10 per cent; evaporation through the skin, 15 per cent. The other aforementioned factors (d) play an inconsiderable part.

Under normal conditions such as this perspiration does not, as I have said before, act as a link in heat regulation. On the other hand, it becomes a very considerable factor under two quite different conditions:

1. When the giving off of heat by means of radiation and conduction is hindered (in cases in which the exterior temperature approaches or exceeds the skin temperature).

2. During an increase of heat production in the organism; for example, during muscular activity when, at the same time, a peripheral dilatation of the dermic blood vessels causes constantly increasing radiation and conduction, and increased pulmonary ventilation results in greater excretion of water through the lungs.

In a definite experiment Rubner and Lewaschew<sup>10</sup> found that the amount of perspiration from a man placed in a room temperature of 28.9 C. (84 F.) corresponded to one half of the total loss of heat. During muscular activity the quantity of perspiration may reach 3 or 4 liters a day (approximately 3½ or 4¼ quarts), corresponding to from 1,600 to 2,150 calories.

10. Rubner and Lewaschew, cited by Müller.<sup>4</sup>

In the experiment already described, namely, when the patient was placed in a heating chest, the temperature of which prevented heat being given off by means of conduction and radiation, dangerous symptoms of cardiac insufficiency appeared. Contrary to this, a normal person who is subjected to similar conditions can make up for the lack of radiation by increased evaporation. In the case reported here this compensation was impossible because of the anhidrosis and, consequently, an interruption in the heat regulation had to occur.

Despite this, however, there was no proof that the patient would be as badly off during muscular activity. The possibility existed that an increase in dissipation of heat by conduction and radiation would be able to compensate for the absence of regulation by evaporation.

In order to throw more light on this question a series of experiments<sup>11</sup> were undertaken by means of Krogh's cycle ergometer, which permits exact evaluation of muscular activity.

During the experiments the room temperature was between 19.4 C. and 20.1 C. (66.9 F. and 68 F.) and the patient did work of 360 Kg. per minute, corresponding to an ordinary bicycle ride up a very slight incline. During the first two experiments the patient was fully dressed; during the third he wore only a suit of thin cotton underwear. By way of comparison, an identical experiment was performed on a normal person of the same age, height and weight, and who, dressed just as the patient, did the same amount of work. Figures 6, 7, 8 and 9 illustrate the results.

In the first two experiments when the patient was dressed and the possibility of giving off heat through conduction and radiation therefore was relatively poor, it was seen that both his pulse rate and the rate of respiration increased much more than in the healthy person. At the same time, contrary to the latter, the

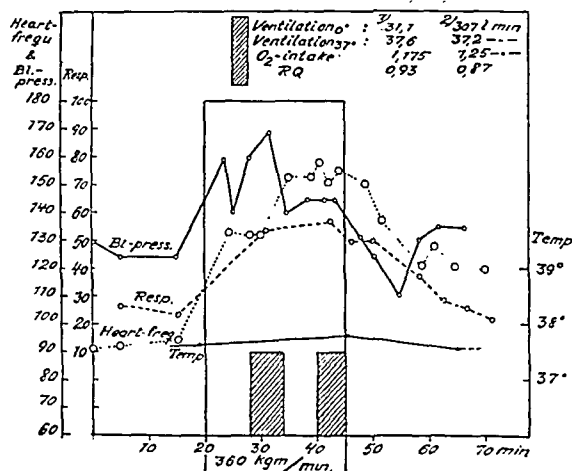


Fig. 7.—Experiment 2: Patient dressed, without ventilator.

patient suffered greatly from working. His skin was hot and red but dry. The other man's skin was moist both under his clothes and where it was exposed.

When similar work is done by normal individuals their blood pressure rises to 160 or 170 mm. of mercury systolic and, as experience has shown, it remains high during the entire period of work. In the second experiment, however, I saw that after the lapse of

11. The experiments were performed in the university zoophysiology laboratory. Professor Krogh lent me the apparatus and Dr. Phil. Marius Nielsen performed the experiments on pulmonary ventilation and basal metabolism.

fifteen minutes the patient's blood pressure fell and simultaneously he stated that he felt exceedingly ill. At the same time the pulse rate became even more rapid than before.

On the other hand, I noted that the patient's temperature rose only approximately 0.1 degree centigrade during the actual work (in experiment 1, from 37.68 to 37.79 C.; in experiment 2, from 37.60 to 37.71 C.), on

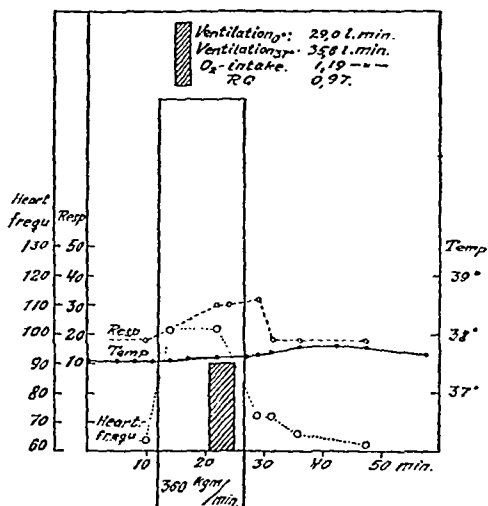


Fig. 8.—Normal person dressed, without ventilator, under the same conditions and doing the same amount of work as the patient in experiments 1 and 2.

the whole not more than in normal persons. This shows that contrary to Richardson's patient, who had a congenital lack of sudoriferous glands, this patient is able to regulate his temperature during increased heat production in the organism. This regulation, however, causes him severe discomfort; i. e., symptoms that remind one of cardiac insufficiency.

Furthermore, it was striking that the patient's condition was decidedly worse than that of a normal person's after the experiment. For as long as forty minutes after he had stopped working he was greatly congested, felt exhausted and had a pulse rate of 120 per minute. The normal person recovered much more quickly and his pulse became normal in the course of ten or fifteen minutes. These observations turned my thoughts to the possibility of his unpleasant sensations being due to latent heart disease and independent of the lack of perspiration. Yet as I mentioned previously, ordinary clinical, x-ray and electrocardiographic examinations showed no sign of cardiac disorder.

This, however, did not entirely exclude the possibility that the "reserve strength" of the heart was reduced and that even during moderate exertion this made itself evident by a threatened insufficiency. In order to investigate this possibility the patient had to be allowed to do the same amount of work under conditions that provided the best opportunity for the giving off of heat by means of heat currents, conduction and radiation.

Therefore the patient was subjected to the same sort of experiment as the foregoing one, but this time he had on only a suit of thin cotton underwear and a strong current of air from a fan was turned on him. As previously mentioned, normally the giving off of heat by means of conduction and currents is insignificant. These factors were, however, now given the opportunity of becoming important.

The result of the experiment (fig. 9) showed that the patient's heart was quite capable of meeting the

demands placed on it under these conditions. It is seen that the patient's pulse rate did not increase abnormally, and soon after he had stopped work it returned to the original figure. Moreover, his rate of respiration increased only moderately and his blood pressure remained high during the whole time he was exerting himself. In addition, he was able to keep at work for forty-five minutes, against a maximum of twenty-five previously and, what is more, he stated that he was without subjective discomfort; indeed he maintained that he had not felt so well for years, since in all that time he had not been able to take such violent exercise without resultant indisposition.

In spite of his anhidrosis, the patient is able to maintain normal heat regulation during exertion. Yet this is possible only through redirection of heat regulation to heat elimination by means of conduction and radiation. In order that this may keep pace with the heat production in the organism, so violent a peripheral vascular dilatation has to take place in the patient that the blood is diverted to the dermic vessels to such an extent as to entail circulatory insufficiency. This is seen to appear in the second experiment (fig. 7) in which there was a fall in blood pressure plus a corresponding additional increase in pulse rate.

The metabolism tests show that the patient's consumption of oxygen while working corresponds to that of the healthy man. Since his basal metabolism is within the boundaries of normality, one must assume that his efficiency is equal to that of the normal individual (about 20 per cent).

Determinations of pulmonary ventilation prove that when dressed the patient's air exchange is somewhat larger than is normal. When he is undressed, it is less than in the normal individual. The deviations are, however, rather inconsiderable and no doubt lie within the physiologic fluctuation limit for untrained persons.

By means of determinations of the basal metabolism and pulmonary ventilation, it is possible to get an idea

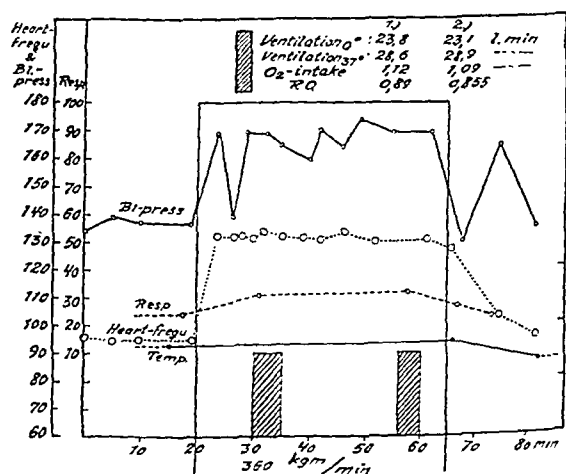


Fig. 9.—Experiment 3: Patient undressed (tricot) with a ventilator in the room.

of the heat production in the organism of the two persons experimented on, and since the bodily temperature is practically constant, one thereby gets a direct expression of the amount of heat given off.

If a mixture of fat, carbohydrates and protein undergoes combustion in the body, every liter of oxygen used is equal to 4.82 calories. According to this the patient's heat production was, in experiment 1, 5.8

calories per minute; in experiment 2, 5.7 and 5.8 calories per minute respectively, and in experiment 3, 5.4 and 5.25 calories per minute. The normal man's was 5.73 calories per minute in the same unit of size.

Approximately 27 Gm. of water-vapor per square meter is given off under the given degree of humidity in the room. It takes 580 gram calories of heat to evaporate 1 Gm. of water at 30 C. (86 F.); this applies both to pulmonary and to skin evaporation. On the basis of this, the loss of heat by evaporation from the lungs could be computed in all experiments. It proved to constitute the following percentage in the patient: experiment 1, 11 per cent; experiment 2, 11 and 10 per cent, respectively; experiment 3, 7.4 and 7.6 per cent. In the control subject it was 9 per cent of the total loss of heat.

In the patient, the remaining 5.15, 5.11, 5.26, 5.0 and 4.48 calories per minute had to be disposed of solely through currents of heat, conduction and radiation. The normal man, on the other hand, was able to give off the other 5.17 calories per minute both in this manner and by means of cutaneous evaporation.

Unfortunately we could not undertake any reliable weighing before and after the experiments. It is therefore impossible to give any definite figures as to how much of the cutaneous loss of heat was given off by the control subject in the form of perspiration. As mentioned, he perspired and his clothes were damp during the work. If, as seems reasonable in this moderately adipose person, from 2 to 3 Gm. of sweat was thus excreted per minute, it means (figured according to the heat used for evaporation) that about 30 per cent of the cutaneous loss of heat took place by means of evaporation. The patient, who is of about the same size and weight, had therefore to give off approximately  $33\frac{1}{3}$  per cent more heat per minute through conduction and radiation than would have been necessary if his sweat secretion had been normal.

As long as he works fully clad, he is forced to suffer such extreme dilatation of the cutaneous blood vessels, and thus such marked diversion of blood to the skin, that symptoms of circulatory insufficiency arise. When he is vigorously fanned and wears nothing but thin underclothing, conditions are so much improved that compensation does not endanger the circulation. The numerical values that we observed, however, permit only a rough estimate of conditions.

The peculiar thing about this case is, above all, the fact that the heat regulation is maintained at the expense of the circulation. Doubtless this is due to the organism having accustomed itself to existing conditions. In any case, it is quite the opposite of the frequently observed phenomenon of an elevation of temperature up to as high as 41 C. (105.4 F.) in untrained persons who are working under conditions unsatisfactory for the loss of heat (for example, marching soldiers).

After the examinations had been made, the patient was followed for two years and a half. He reports that his sweat secretion has not returned and his symptoms are unchanged, being especially pronounced in the summer. He gets on better in life since the invalidity court had him trained in clerical work; he is now engaged in sedentary, inside work and is able to retain his capacity for work.

#### SUMMARY

A man with general anhidrosis, aged 27, until a long febrile illness (paratyphoid fever) six years prior to the examination had had normal sweat secretion. He

complained of extremely distressing symptoms under circumstances in which sweat secretion normally takes place. By means of a series of pharmacologic and physical tests I verified the patient's statement that he could not perspire.

A biopsy from the skin showed that about one half of the sweat glands were present while the other half had undergone degeneration.

By means of a number of muscular activity experiments it was determined that during increased heat production in the body the patient's heat regulation was normal but that signs of circulatory insufficiency arose which must be ascribed to extreme vascular dilatation in the skin. This forms the basis for a compensating, excessive loss of heat through conduction and radiation. Continued observations of the patient during two years and a half showed that the symptoms remain unchanged.

### Clinical Notes, Suggestions and New Instruments

#### A LUMBAR PUNCTURE NEEDLE FOR THE ACCURATE CONTROL OF SPINAL FLUID FLOW

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Intern, Harlem Hospital

Any unnecessary and uncontrollable loss of spinal fluid while doing lumbar puncture for any purpose is undesirable. With the ordinary type of spinal tap needle the stylet has to be withdrawn completely to obtain spinal fluid or to make a spinal fluid pressure determination; and, to stop the flow, the stylet has to be reintroduced. This often causes an appreciable loss of cerebrospinal fluid. Also, with the needles in common use, spinal fluid will often flow along the under surface of the needle

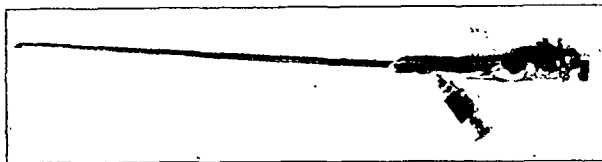


Fig. 1.—Appearance of needle.

for a variable distance before it drops into a collecting test tube or ampule, and in this way there is a spill. It occurred to me that it might be of advantage to attempt to prevent this loss of cerebrospinal fluid by designing a needle that would perhaps control more accurately the escape of cerebrospinal fluid.

The needle is the stereotyped lumbar puncture needle, to which an obliquely placed bar outlet has been added. A Luer

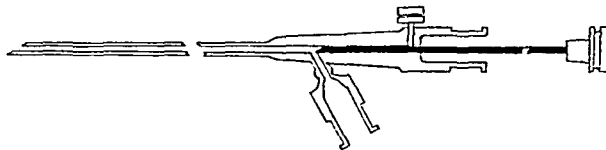


Fig. 2.—Section illustrating the mechanism.

type syringe will fit both outlets. This needle has an adjustable stylet, which it is not necessary to withdraw completely in order to obtain spinal fluid. On the horizontal bar of the handle there is a set screw, which, when properly adjusted, prevents the complete withdrawal of the stylet. Under these circumstances it permits spinal fluid to flow from the opening in the oblique bar. The stylet is beveled so that complete withdrawal is impossible when the screw is set, but a turn of the screw

From the Surgical Service of Harlem Hospital, Dr. C. S. B. Cassara, director.

cury will produce diuresis.<sup>11</sup> These observations with regard to the concentration of chloride and sodium in the plasma and serum respectively indicate that some substances must have an optimal concentration in the plasma or serum and probably in other tissues, before renal action can occur. In renal edema, mercury appears to have a combined action; that is, it affects both the kidneys and other tissues. There is almost unanimous agreement that the renal action of mercury is attributable to a specific effect on the cells of the renal tubules, which leads to inhibition of tubular absorption of water and chlorides.

**Clinical Results.**—Since the introduction of merbaphen as a diuretic in 1920, it has been used in many types of edema, and the results often have been satisfactory. The clinical results obtained in 200 cases at the Mayo Clinic by a group of workers, including myself,<sup>12</sup> are submitted as typical of those secured by many physicians in different institutions. The control of diet and fluid intake is very important.<sup>13</sup> We employed compounds of organic mercury alone or in combination with other diuretic substances. These patients had cardiac disease, hepatic disease, renal disease, chronic lipid nephrosis, polyserositis, myxedema, intra-abdominal malignant disease with ascites, and general edema of indeterminate etiology. De Takáts<sup>14</sup> has reported that good diuretic action followed the administration of a mercurial compound in cases in which edema was attributable to thrombophlebitis. The diuretic results in our series of cases and in cases reported by others were most satisfactory in cardiac disease. A decrease of from 50 to 80 pounds (22.7 to 36.3 Kg.) not infrequently occurred.<sup>15</sup> The diuresis which follows the administration of mercurial compounds is usually much more satisfactory than that which follows the administration of digitalis or compounds of caffeine. When the dependent edema is excessive, it increases the load on the heart muscle so that early use of an organic preparation of mercury as a diuretic is indicated. Diuresis thus helps to restore myocardial function. The results of the administration of mercurial compounds in cases of lipid nephrosis were often as good as they were in cardiac disease. The effects in hepatic disease, particularly cirrhosis with ascites, were not so good as they were in the two previously mentioned conditions, although they compared favorably with the results obtained in cases of chronic glomerulonephritis with edema. The immediate results in myxedema were satisfactory. Both the temporary and the permanent effects obtained in a small group of cases of indeterminate ascites and edema were surprisingly good. The general consensus seems to be that, given a case of refractory edema, the therapeutic test with organic mercury should be considered.

**Dose and Toxicity.**—It has been the usual procedure to inject intravenously 0.5 cc. of a given compound of organic mercury as an initial trial dose. If no toxic effects are evident, 2 cc. is injected every three or four days as long as there is a distinct diuretic response. If diuresis does not occur after two or three injections,

other diuretics should be tried. Patients who have chronic edema have been given repeated doses of organic mercury for several years with beneficial action. The case reports of Wiseman,<sup>16</sup> Smith,<sup>17</sup> and Maxwell, Scott and Harvey<sup>18</sup> are pertinent in this connection. The latter gave 240 cc. (198 injections) of mersalyl to a patient with recurring cardiac edema, in five years. At necropsy, no renal disease was found. These authors advised a dose of 1.2 cc. of mersalyl for repeated injections for a prolonged period. Organic mercury, when given by mouth, has not proved satisfactory. There have been several reports, including that of Fulton,<sup>19</sup> of good action following the rectal administration of organic mercury. The lethal dose of mercury in the form of bichloride and merbaphen has been estimated for rabbits.<sup>20</sup> It varies from 2.5 to 5 mg. of mercury for each kilogram of body weight. The maximal dose tolerated by the rabbit is 3 mg. for each kilogram of body weight, and Keith and Johnstone<sup>21</sup> demonstrated that a similar amount is tolerated by the dog. Applying this dose to an adult human being who weighs 70 Kg., the theoretical dose that could be tolerated by a human being would be 6 cc. of merbaphen, a dose that is three times greater than the usual injected.

The distressing reactions that have actually been seen after the injection of organic mercury are stomatitis, diffuse dermatitis, diarrhea, hematuria and renal insufficiency. Luckily, these reactions are rare. They occurred more frequently after administration of merbaphen than they did after the administration of mersalyl. If administration of the drug was discontinued for from seven to ten days, the drug often could be administered again and would produce satisfactory effects. Mersalyl, in my hands, has been more toxic locally than has merbaphen. Wood,<sup>22</sup> on the other hand, had the opposite experience and found that merbaphen was more toxic locally. Sloughs are likely to occur in obese, edematous patients, who often have small peripheral veins, so that the injecting needle enters the lumen with difficulty. Dilution of mersalyl or merbaphen in 0.9 per cent solution of sodium chloride or in the patient's own serum should prevent such local sloughs in most cases. Melville and Stehle<sup>6</sup> performed experiments on dogs, in order to compare the diuretic effects of mercury bichloride and organic mercury. They dissolved the former drug in an excess of the dog's own serum and found that the injection did not produce any local or general untoward reaction. He recalled Lister's<sup>23</sup> experiments, which were carried out in 1884 and which showed that mercury bichloride was soluble in an excess of horse serum and that it still had antiseptic properties in such a solution.

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12. Binger, M. W., and Keith, N. M.: The Effect of Diuretics in Different Types of Edema, *J. A. M. A.* **101**: 2009-2015 (Dec. 23) 1933.

13. The content of the diets giving the best results was low in water, chloride and sodium. The amount of potassium was relatively greater than sodium. The extra fluid intake was limited to from 600 to 800 cc. daily.

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## ACID-PRODUCING SALTS

Since the introduction of calcium chloride as a diuretic by Schultz<sup>24</sup> in 1918, several other acid-producing salts have been used and accepted as having diuretic properties. These include ammonium chloride<sup>25</sup> and ammonium nitrate.<sup>26</sup> The diuretic action of these salts depends on the administration of a comparatively large dose and on the liberation of the acid radical within the body. For example, in the intestine, calcium chloride is split; the calcium in large part remains there unabsorbed, while the chloride readily passes through the intestinal wall. In the case of ammonium salts, which are readily absorbed, the ammonia is soon converted into urea and the acid radical liberated. The diuretic action of acid-producing salts is thought by many investigators to be caused by the shift in the acid-base equilibrium to the acid side. I believe there are additional factors, including a specific effect of the individual acid radical. The nitrate radical appears to have the most marked diuretic effect of the acids so far studied. The chloride radical produces the most marked shift in the acid-base balance toward the acid side and is particularly helpful in clinical cases of edema in which the value for chloride in the plasma is abnormally reduced; however, severe acidosis has occurred, and this fact must be kept constantly in mind when giving large daily doses of ammonium chloride. Methemoglobinemia may develop after the administration of ammonium nitrate<sup>27</sup> but soon disappears if the administration of the salt is promptly discontinued. Both ammonium chloride and ammonium nitrate may give rise to a moderate degree of renal insufficiency.<sup>12</sup> This effect is usually temporary. Evidence from different sources seems to indicate that the change in acid base balance to a more acid condition is the cause of the decrease in renal function. If severe renal insufficiency exists before these two salts are administered, their ingestion may give rise to retention of nitrates or to chloride acidosis, with their accompanying toxic symptoms. The administration of these salts is contraindicated when the value for the urea is 75 mg. or more per hundred cubic centimeters of blood.

The daily doses recommended for diuretic purposes are as follows: calcium chloride, 10 Gm.; ammonium chloride, 9 Gm.; ammonium nitrate, 12 Gm.; these doses are much larger than usually recommended and mentioned in the Pharmacopeia. Ammonium chloride and ammonium nitrate in my experience are best administered in doses of 0.5 Gm. as enteric coated pills.

## POTASSIUM SALTS

For two centuries, certain potassium salts have been employed as diuretics in clinical medicine. Wilks and Taylor<sup>28</sup> used potassium nitrate successfully in the treatment of dropsy in 1863. In 1920 Blum<sup>29</sup> and

Magnus-Levy,<sup>30</sup> and Barker<sup>31</sup> in 1932 were able to show that potassium chloride could be administered safely by mouth in relatively large doses and that it frequently produced a satisfactory diuresis. It occurred to me in 1932 that potassium nitrate might be the salt of choice if potassium itself should have an additional diuretic action to the diuretic action of the nitrate radical. Since then I have been able to show that, when ingested by mouth, potassium salts, including the chloride, nitrate, bicarbonate, acetate and citrate, have a greater or lesser diuretic effect when administered to normal men.<sup>32</sup> After administration of each of these salts there was an increase in volume of urine and a rapid and efficient excretion of potassium in the urine. In fact the kidney was able to concentrate the potassium delivered to it by the blood serum approximately fifty times. Lack of absorption by the renal tubules is the most plausible explanation of this concentration of potassium. The reaction of the urine invariably became more alkaline, and after administration of potassium bicarbonate, potassium acetate or potassium citrate the  $p_H$  of the urine approached 8.0, a value that had been obtained previously after administering large amounts of similar salts of sodium. Potassium nitrate caused a relatively greater diuresis and greater increase in the excretion of chloride and sodium than did any of the other salts. Potassium chloride was next in efficiency, and still less efficient were potassium bicarbonate, potassium acetate and potassium citrate. Binger and I<sup>32</sup> administered potassium salts to a series of sixty patients who had edema that was attributable to various factors. Potassium nitrate was the salt of choice, although the chloride was administered to several patients and the bicarbonate was given to one patient. The diuretic results were very satisfactory in 50 per cent and fair in 33 per cent of cases; no diuretic action was noted in 18 per cent of cases. An increased urinary output was thus obtained in approximately 80 per cent of the cases.

To avoid toxic effects in cases of cardiac edema, Magnus-Levy<sup>30</sup> and Blum<sup>29</sup> advised giving small initial doses of potassium chloride. This has also been our procedure at the clinic in cases of edema in which there is severe renal insufficiency. However, in cases of renal dropsy in which there is extreme oliguria or anuria, or a value for the urea that is greater than 100 mg. per hundred cubic centimeters of blood, potassium salts should not be administered. In one case a concentration of 100 mg. of urea per hundred cubic centimeters of blood did not prevent a satisfactory diuresis. My results with the administration of potassium nitrate in cases of renal edema appear to be better than those obtained with ammonium nitrate. This may be attributable to the rapid excretion of potassium and to the shift in acid-base balance to the alkaline side. Since the preceding precautions were adopted at the clinic four years ago, we have not observed an unmistakable toxic effect that was attributable to the potassium radical.

The amount of a given salt necessary to produce diuresis is considerably greater than the dose recommended in the Pharmacopeia. The usual initial daily dose of potassium chloride was 9 Gm., and that for the nitrate and the bicarbonate was 12 Gm. Some patients

24. Schultz, Erich: Klinische Beobachtungen über Nierenentzündung bei Kriegsteilnehmern, *Ztschr. f. klin. Med.* **86**: 111-138, 1918.

25. Keith, N. M.; Barrier, C. W., and Whelan, Mary: Treatment of Nephritis and Edema with Calcium, *J. A. M. A.* **83**: 666-670 (Aug. 30) 1924.

26. Gamble, J. L.; Blackfan, K. D., and Hamilton, Bengt: A Study of the Diuretic Action of Acid-Producing Salts, *J. Clin. Investigation* **1**: 359-388 (April) 1925.

27. Jacobs and Keith,<sup>12</sup> Keith, N. M.; Whelan, Mary, and Bannick, E. G.: The Action and Excretion of Nitrates, *Arch. Int. Med.* **46**: 797-832 (Nov.) 1930.

28. Eusterman, G. B., and Keith, N. M.: Transient Methemoglobinemia Following Administration of Ammonium Nitrate, *M. Clin. North America* **12**: 1489-1496 (May) 1929.

29. Wilks and Taylor, A. S.: A Large Quantity of Nitrate of Potash Was Taken Medicinally: Elimination of This Salt by the Urine: With Remarks, *Guy's Hosp. Rep.* **9**: 173-179, 1863.

30. Blum, Léon: Recherches sur le rôle des sels alcalins dans la pathogénie des oedèmes: l'action diurétique du chlorure de potassium, *Presse méd.* **28**: 685-688 (Sept. 29) 1920.

31. Magnus-Levy, A.: Alkalichloride und Alkalikarbonate bei Oedemen, *Deutsche med. Wchnschr.* **46**: 594-596 (May 27) 1920.

32. Barker, M. H.: Edema as Influenced by a Low Ratio of Sodium to Potassium Intake: Clinical Observations, *J. A. M. A.* **98**: 2193-2197 (June 18) 1932.

33. Keith, N. M., and Binger, M. W.: Diuretic Action of Potassium Salts, *J. A. M. A.* **105**: 1584-1590 (Nov. 16) 1935.

were able to take a 10 per cent solution of a salt without discomfort. Others complained of epigastric discomfort or even complained of nausea. Administration of the nitrate or the chloride in doses of 0.5 mg., in the form of an enteric coated pill, has been most satisfactory. This corresponds with our previous experience with the administration of ammonium chloride and ammonium nitrate.

#### CAFFEINE OR PURINE DIURETICS

Caffeine has been recognized as a diuretic in cases of dropsy since 1840, but it was not until von Schroeder<sup>33</sup> in 1887 performed his classic experiments, which demonstrated the effect of caffeine in normal rabbits and pigeons, that there was a scientific basis for its diuretic action. He demonstrated that caffeine with sodium benzoate increased both the volume and the solid constituents of the urine. He believed that its action was chiefly attributable to a direct renal effect. Since von Schroeder's work, numerous investigators have shown that the increased urinary excretion of solids was attributable to chlorides and fixed base, the latter being usually sodium.

The renal action of caffeine has been a subject of much research. Richards and Plant<sup>34</sup> and Cushny and Lambie<sup>35</sup> showed conclusively with rabbits that caffeine could produce a diuresis at times when the renal blood flow is not increased. Recent experiments on non-anesthetized rabbits by Walker, Schmidt, Elsom and Johnston<sup>36</sup> confirmed this observation. Richards<sup>37</sup> observations that caffeine causes an increased capillary flow in the glomeruli of the frog may mean that there is increased capillary permeability. Recent advances in renal physiology suggest that different types of diuretics might have specific actions on the glomeruli or the tubules. Schmitz,<sup>38</sup> by employing the creatinine clearance test, was able to show that merbaphen and aminophylline had a different effect on renal excretion of creatine. Herrmann and associates obtained similar results clinically in cases of cardiac edema. Because there is some question as to the exact significance of creatinine clearance by the kidney, I do not feel that the results of Schmitz<sup>38</sup> and of Herrmann and his associates<sup>39</sup> have yet established the fact that aminophylline exerts its diuretic effect by increasing glomerular excretion. Perhaps, after all, von Schroeder's direct renal action may be attributable to the effect of caffeine on the cells of the renal tubules.

Several facts have indicated that extrarenal action may play a very important rôle in diuresis produced by caffeine. Curtis<sup>40</sup> has shown that caffeine diuresis is accompanied by slight but definite rise in total chlorides in the blood. He also cited experiments on rabbits in which the diuresis was inhibited by the intraperitoneal injection of distilled water and hypotonic solutions of sugar.

Meinertz in 1904<sup>41</sup> was the first to show by carefully controlled experiments on patients that administration of theobromine caused an increased excretion of chlorides as well as of water. Since then theophylline, aminophylline, and other xanthine compounds have been used both experimentally and clinically, with similar results. Two normal men whose intake of fluids and diet was controlled, as it was in our observations of the action of potassium salts, were given aminophylline. This produced a slight transitory increase in urine volume and urinary excretion of chlorides.<sup>7</sup> These compounds of caffeine were given to patients who have dropsy and have produced marked diuresis. The diuretic effects are neither so great, so rapid nor so uniform as are the effects of organic mercury. According to most workers, the present usefulness of these xanthine derivatives, alone or in combination with other diuretics, has been chiefly in cases of edema with severe renal insufficiency; in such cases these derivatives may produce satisfactory diuresis without any apparent toxic effect.

The xanthine diuretics employed clinically are theobromine with sodium salicylate, which is given in doses of from 3 to 4 Gm. daily; theophylline, which is given in doses of 1 Gm. daily; theophylline with ethylenediamine (aminophylline), which is given daily in doses of from 0.8 to 1 Gm. by mouth or intravenously in solution, and theophylline with sodium acetate (theocin), which is given in doses of 0.8 Gm. daily. All four preparations, if given continuously for some time by mouth, are likely to give rise to nausea and vomiting. A newer compound, in which sodium is replaced by calcium, namely, theobromine calcium salicylate (theocalcin), appears less likely to cause gastro-intestinal disturbances.

#### USE OF COMBINED DIURETICS

The use of diuretic mixtures is an old therapeutic principle in the treatment of dropsy. A frequently prescribed combination was digitalis, squills and mercury, but the results were often disappointing because of inadequate dosage. In 1924 and 1925 Whelan, Barrier and I<sup>42</sup> employed this principle in the treatment of edema and found that ammonium chloride and the compounds of organic mercury were much more effective when used in combination than they were when used singly. Later, Jacobs and I<sup>43</sup> substituted ammonium nitrate for ammonium chloride, as the former caused less digestive disturbances and possessed greater diuretic properties. Our clinical and experimental studies on the combined action of ammonium nitrate and compounds of organic mercury demonstrated that both types of substances, that is, an acid-forming salt and mercury, have the same fundamental property of removing water, chlorides and fixed base from the organism. The combined action was therefore suggested as a simple cumulative effect of the two substances. Blumgart and his associates<sup>44</sup> also considered that their results demonstrated such an additive effect. Ethridge, Myers and Fulton<sup>45</sup> have lately reported a thorough experimental study of this problem in dogs. Their results show clearly that in

33. von Schroeder, W.: Ueber die Wirkung des Coffeins als Diureticum, Arch. f. exper. Path. u. Pharmacol. 22: 39-61 (Oct.) 1887.

34. Richards, A. N., and Plant, O. H.: Urine Formation by the Perfused Kidney: Preliminary Experiments on the Action of Caffeine, J. Pharmacol. & Exper. Therap. 7: 485-509 (Nov.) 1915.

35. Cushny, A. R., and Lambie, C. G.: The Action of Diuretics, J. Physiol. 55: 276-286 (Aug. 3) 1921.

36. Walker, A. M.; Schmidt, C. F.; Elsom, K. A., and Johnston, C. G.: The Effect of Pituitrin, Water, Theobromine and Caffeine on the Renal Blood Flow and Creatinine Clearance in the Rabbit, J. Pharmacol. & Exper. Therap. 57: 1-11 (Jan.) 1937.

37. Richards, A. N.: Kidney Function, The Harvey Lectures, series 16, 1920-1921, pp. 163-187.

38. Schmitz, H. L.: Studies on the Action of Diuretics: I. The Effect of Euphylline and Salyrgan upon Glomerular Filtration and Tubular Reabsorption, J. Clin. Investigation 11: 1075-1097 (Nov.) 1932.

39. Herrmann, George; Stone, C. T.; Schwab, E. H., and Bondurant, W. W.: Diuresis in Patients with Congestive Heart Failure, J. A. M. A. 99: 1647-1651 (Nov. 12) 1932.

40. Curtis, G. M.: The Action of the Specific Diuretics, J. A. M. A. 93: 2016-2018 (Dec. 28) 1929.

41. Meinertz, J.: Versuche über Diurese insbesondere über die Wirkung des Theocinnatrium aceticum, Therap. Monatsh. 18: 275-285, 1904.

42. Keith, N. M.; Barrier, C. W., and Whelan, Mary: The Diuretic Action of Ammonium Chloride and Novasurol in Cases of Nephritis with Edema, J. A. M. A. 85: 799-806 (Sept. 12) 1925. Keith, N. M., and Whelan, Mary: The Combined Diuretic Action of Certain Acid-Producing Salts and Organic Mercury Compounds, Tr. A. Am. Physicians 41: 181-188, 1926.

43. Ethridge, C. B.; Myers, D. W., and Fulton, M. N.: Modifying Effect of Various Inorganic Salts on the Diuretic Action of Salyrgan, Arch. Int. Med. 57: 714-728 (April) 1936.

dogs the combined effect of salyrgan and an acid-forming salt is greater than the sum of the effect of each when administered separately and therefore is not simply a cumulative effect. They found a constant decrease in the carbon dioxide combining power of the blood plasma of from 9 to 15 volumes per cent and suggested that this change in acid-base balance was the cause of the diuresis. I think that these changes in the plasma are too slight to account entirely for the diuresis and I believe that there are other etiologic factors, such as the specific effects of the individual acid ions, which must be considered. Further studies are needed to clarify the complicated equilibriums involved.

The combined use of diuretics has a distinct place in the present-day treatment of dropsy. The study of 200 cases of various types of edema, which was mentioned previously, showed how frequently the edema could be controlled. The best results were obtained when from 20 to 30 Gm. of such acid-producing salts, as calcium chloride, ammonium chloride and ammonium nitrate, or when such salts as potassium nitrate and potassium chloride were administered before the organic mercury was injected intravenously. The administration of larger doses of diuretic substances in part is responsible for these results, but physicians should be on the alert for the possible development of untoward reactions. In my opinion, toxic effects are becoming less frequent and, as our knowledge increases, they will become fewer. For example, since potassium nitrate and potassium chloride have been substituted for the ammonium salts, when employed either alone or combined with organic mercury, evidence of acidosis and increased renal insufficiency has almost disappeared. The favorable clinical reports of the action of a substance containing both the caffeine derivative theophylline and organic mercury indicate the future possibilities of combined diuretics.<sup>44</sup>

## Council on Foods

THE COMMITTEE HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT. FRANKLIN C. BING, Secretary.

The Council on Foods of the American Medical Association records with deep sorrow the death of

### EDWIN OAKES JORDAN

When Dr. Edwin Oakes Jordan died of cerebral thrombosis at the age of 70, the University of Chicago lost an honored professor emeritus of bacteriology, the medical sciences an outstanding investigator and the Council on Foods a distinguished member. Professor Jordan was born in Thomaston, Maine, on July 28, 1866. He received his formal education at the Massachusetts Institute of Technology and at Clark University; the latter institution awarded him the degree of Doctor of Philosophy in 1892. In that year he was appointed associate in anatomy at the newly organized University of Chicago. He was made professor of bacteriology in 1907 and held this position until 1933, when he became professor emeritus.

44. Crawford, J. H., and McDaniel, W. S.: Some Observations on Mercurial Diuretics, *Ann. Int. Med.* 8: 1266-1273 (April) 1935. Certain substances such as thyroid extract (Epstein, A. A.: Thyroid Therapy and Thyroid Tolerance in Chronic Nephrosis, *J. A. M. A.* 87: 913-918 [Sept. 18] 1926), parathyroid extract (McCann, W. S.: Diuretic Action of Parathyroid Extract-Collip in Certain Edematous Patients, *ibid.* 90: 249-253 [Jan. 28] 1928), compounds of bismuth (Stockton, A. B.: Bismuth Diuresis and the Blood and Urinary Changes Under Clinical Conditions, *Arch. Int. Med.* 50: 142-149 [July] 1932; Mehrtens, H. G.: Hanzlik, P. J.; Marshall, D. C., and Brown, N. S.: Bismuth as a Diuretic, *J. A. M. A.* 91: 223-225 [July 28] 1928) and hypertonic solutions of dextrose and sucrose, when used clinically, have been found to produce diuresis. Their use has not been general, and lack of space does not permit detailed comment in this article.

Professor Jordan's early work was in biology; his doctoral dissertation was entitled "The Habits and Development of the Newt." But early in his career when a student of Professor Sedgwick he became interested in bacteriology and gradually devoted more time to investigations in this field. In 1896 he studied at the Pasteur Institute. It was as an established bacteriologist that in 1900 he published an important paper on the bacterial self purification of streams. This now classic contribution represents work undertaken at the request of the Sanitary District of Chicago and carried out with E. E. Irons, who assisted him in making observations. Dr. Jordan determined bacterial counts on water from various locations along the drainage system of Chicago, particularly from Bridgeport southward along the Illinois River to the junction of the latter with the Mississippi above St. Louis. The results showed conclusively that the number of bacteria becomes less as one examines water samples farther and farther away from the source of contamination.

Dr. Jordan thus contributed at an early stage of his career to the solution of important questions of public health. He investigated the relationship between typhoid fever and contaminated water supplies, and he reported on the longevity of typhoid bacilli in sewage. This and similar work contributed largely to the development of "Standard Methods for the Examination of Water and Sewage" of the American Public Health Association. Professor Jordan's interest in the epidemiology of paratyphoid infections persisted throughout his entire career; it may be said that beginning in 1913 he was mainly responsible for the annual reports which have appeared in *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* on typhoid mortality in large cities in the United States. His work in epidemiology was not limited, however, to the study of the typhoid group of organisms. He is the author of at least a dozen papers on the epidemiology of influenza and other respiratory diseases.

He contributed much to our knowledge of bacterial morphology; possibly his early training in the structural aspects of biology may have been responsible for his interest in this important field. Specifically he should be credited with important observations on variations in bacteria and with the development of practical methods that are now used to differentiate the paratyphoid-enteritidis group of organisms.

Perhaps Dr. Jordan is best known for his fundamental contributions to the epidemiology of food poisoning, particularly that of bacterial origin. His monograph on "Food Poisoning and Food Borne Infection" is a classic in this special field. The importance of staphylococci as a source of food poisoning was emphasized in conjunction with G. M. Dack. In collaboration with associates, Professor Jordan showed that staphylococci are capable of producing an exotoxin which, if introduced orally, is capable of causing severe intestinal disturbance; the toxin is destroyed by boiling.

Dr. Jordan will be long remembered as a teacher, and as author and co-author of important textbooks. Since the organization of the Department of Hygiene and Bacteriology of the University of Chicago in 1913, approximately sixty students have taken their doctorate work in that department. The majority carried out the research for their dissertations under Dr. Jordan's immediate direction. The list of distinguished investigators who began their work in his laboratory—and this includes many who did not complete the work for the degree of Ph.D. in this field—is imposing. These men and women and others who were fortunate enough to come under the influence of Professor Jordan will always remember him as an earnest, scholarly investigator and as a courteous and kindly adviser. Many other persons will remember him as a gifted writer in the many fields to which he so richly contributed.

In his later years Dr. Jordan was called on to serve on innumerable boards and committees. He was elected a member of the Council on Foods in 1933. He was a member of many scientific and medical societies and was honored in the spring of 1936 by election to membership in the National Academy of Sciences. Because of his ability to concentrate on the fundamental principles and essentials of each task, he was able to accomplish a prodigious amount of work. In the words of Ludvig Hektoen, "the results of his work stand well the tests of time."

# THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, DECEMBER 19, 1936

## GASTRIC ACIDITY AND EXPERIMENTAL ULCER

The view that ulcers of the gastro-intestinal tract are due to a local loss of resistance on the part of the mucosa to the digestive activity of the gastric juice has been prominent since the time of John Hunter, more than 150 years ago. Indeed, the term "peptic" ulcer itself is an expression of that view. Theories to explain the local loss of resistance have been many. In general, as has been pointed out,<sup>1</sup> these have been concerned with a lowering of the normal resistance alleged to be conferred on the mucosa by such factors as a general "vital" principle, the protective action of gastric mucus, the neutralizing effect of alkaline blood in the capillaries of the mucosa, or the presence of an antipepsin in the mucosa. Recent studies, however, have tended to emphasize the immediate importance of a positive factor; namely, an increase in the amount of or activity of some corrosive agent in the gastric juice. The constant observation that ulcers occur only in those parts of the alimentary tract exposed to gastric juice, namely, the lower part of the esophagus, the stomach, the first part of the duodenum, the jejunum adjacent to the stoma of a gastro-enterostomy and the ileum adjacent to the entrance of Meckel's diverticulum, which contains a gastric type of mucosa, lends some support to this view.

Perhaps the most convincing evidence that an excessive amount of some constituent of the gastric juice is a primary etiologic factor in ulcers of the gastro-intestinal tract has come from a series of experiments, chiefly at the Mayo Clinic<sup>2</sup> and at the University of Chicago,<sup>1</sup> involving surgical alterations of the alimentary tract of the dog. Investigations in the former laboratories<sup>2</sup> demonstrated that ulcers in the jejunum almost invariably occurred in dogs in which this portion of the intestinal tract was anastomosed to the stomach and the duodenum was drained into the ileum. The

ulcers usually occurred near the line of the anastomosis. Since ulcer formation could be prevented by draining the duodenal secretions into the jejunum near the anastomosis, the conclusion that the lesions were due to the absence of the neutralizing effect of the duodenal secretions appeared warranted. Further evidence that high gastric acidity is a primary factor in the production of experimental ulcer has been obtained in a series of interesting experiments by the Chicago investigators.<sup>1</sup> First it was shown that certain tissues, such as spleen, kidney and sections of the duodenum or other portions of the small intestine, implanted in "windows" of normal stomachs remained intact whereas similar transplants into openings made in isolated gastric pouches were promptly digested away. Obviously, the most important difference between the conditions of these two experiments is the fact that the implants in the normal stomach were exposed to the action of gastric contents whereas those in the isolated pouch were exposed to pure gastric juice. As is well known, the principal difference between gastric contents and pure gastric juice is the higher free acid content of the latter, since partial neutralization by food and regurgitated duodenal contents cannot occur in the isolated pouch. Even more convincing results were obtained by the production of lesions in the gastric mucosa itself. Chronic, progressive perforating ulcers were produced in the mucosa of isolated gastric pouches by mechanically preventing the prompt drainage of gastric juice and thus causing it to remain in contact with the gastric wall for unusually long periods. If generalization is warranted from results on living frog muscle,<sup>1</sup> the concentration of acid necessary for the digestion of living tissue is from 0.1 to 0.15 per cent. Within wide limits, the concentration of pepsin appears to be of no importance. Usually the amount of free acid present in pure gastric juice obtained from pouches exceeded the critical level required for the digestion of intact tissues.

Other recent work<sup>3</sup> likewise places special emphasis on the importance of the acid of gastric juice in the production of experimental ulcers in the dog. As others have observed, it was found that ulcers developed in the jejunum just below the point of anastomosis to the pylorus, if the duodenal secretions were drained into the lower ileum. However, if the duodenal fluid was drained into the jejunum a few inches below the point of the gastrojejunal anastomosis or into the stomach itself, ulcers did not occur. Analysis of the gastric contents in both instances showed that the acidity was less than that apparently required for the digestion of living tissue.

Although the foregoing results appear to warrant the conclusion that increased acidity is probably the primary etiologic factor in the production of experimental ulcer in dogs, it cannot yet be stated that this conclusion

1. Dragstedt, L. R.: Some Physiologic Principles Involved in the Surgical Treatment of Gastric and Duodenal Ulcer, *Ann. Surg.* 102: 563 (Oct.) 1935.

2. Mann, F. C., and Williamson, C. S.: The Experimental Production of Peptic Ulcer, *Ann. Surg.* 77: 409 (April) 1923.

3. Wilhelmj, C. M.; O'Brien, F. T.; McCarthy, H. H., and Hill, F. C.: The Role of the Duodenal Secretions in the Prevention of Experimental Jejunal Ulcer, *Am. J. Physiol.* 117: 79 (Sept.) 1936.

applies to the disease occurring in man. However, as has been pointed out by Dragstedt,<sup>1</sup> the frequency of the occurrence of abnormally high gastric acidity in patients with gastric or duodenal ulcer indicates that the relationship may be more than casual.

### ANOREXIA NERVOSA

Sir William Gull in 1868 referred to "a peculiar form of disease occurring mostly in young women, and characterised by extreme emaciation." This condition, which involves a refusal to eat, has since become known as anorexia nervosa. Ryle,<sup>1</sup> in the Schorstein Memorial Lecture delivered at the London Hospital October 15, discussed the present state of knowledge of this disorder. His analysis was based on a personal experience of fifty-one cases seen during sixty-one years of consulting practice. "In common with other psychoneurotic disorders," he states, "the incidence is higher in the middle and upper classes. . . . Motive and opportunity and perpetuating causes are more frequent in homes where circumstances do not demand active physical occupation and where sensitive natures and solicitude flourish side by side." There was specific mention of nervous heredity in only nine cases in the whole series. These included one instance of a drunken parent and two instances of one insane parent. A closer inquiry would, he believes, reveal a far higher incidence of "nervousness" in the immediate family history of these cases. Of the initiating factors in the young women (who form the largest group affected), emotional crises in the shape of love affairs, broken engagements and possibly school attachments may be considered to be important. "Slimming," usually instigated by the ridicule of school friends on account of adolescent plumpness, is generally considered second in importance to these emotional crises. In several cases poorly conducted homes were largely to blame. In nine cases the anorexia seemed to develop on a basis of genuine physical illness or after an operation. The probability of multiple contributory factors, however, must be constantly considered.

The onset of the condition is usually insidious. The most pronounced clinical characters are loss of weight, poor appetite and amenorrhea. The important factors of the clinical examination are the prominence of the bones, the scaphoid abdomen and absence of anemia. There is a tendency to the development of excess hair on the body and face. The pulse is slow and the blood pressure is usually low. Organic disease cannot usually be discovered. The prognosis in the psychoneurotic group is generally good if diagnosis is not too long postponed and appropriate treatment is arranged. Complications may occur but are relatively rare. Evidences of deficiency disease are exceptional. Pulmonary tuberculosis may be superimposed and must always be thought of as a possible complication.

The first essential of treatment, Ryle believes, is to explain to the patient and the parents separately the nature of the disease in the simplest and most direct terms. Strong assurance is highly important. Firmness, kindness and tact must be employed in just proportions, and the dietary carefully watched. In some cases it may be necessary to sit with the patient until each meal is finished. Treatment should be started in bed and continued there until definite improvement can be noticed. Psychoanalytic methods he thinks are unwise and may do harm. Explanation, reassurance, distraction and fit treatment of the starvation are usually adequate. The key to real advancement, Ryle states, still lies largely with earlier diagnosis and rational preventive treatment.

### PATHOGENIC FUNGI

In a recent review on pathologic fungi<sup>1</sup> it is pointed out that there is at present a growing tendency to give increased attention to the etiologic relationship of such organisms to disease particularly of the ear, nose, throat and lower respiratory system. The author states that in the routine of a private practice he has observed seventeen patients with verified fungous infection of the ear, nose, throat and respiratory tract during the past twelve months. Vigilance is required, therefore, on the part of practicing physicians for the detection of patients affected by such infestations.

Clinical reports relating certain species of fungi to disease are numerous. The yeastlike fungus *Monilia*, for example, is known to produce a group of conditions, known as moniliasis, involving the skin, mucous membranes and viscera. This type of fungus produces distinct lesions of the oral and pharyngeal cavities (thrush) and even of the bronchopulmonary system. Pulmonary moniliasis may be accompanied by symptoms which simulate those of pulmonary tuberculosis. Indeed, the clinical picture of severe pulmonary moniliasis is that of advanced tuberculosis, there being a cough, expectoration, hemoptysis, septic fever, night sweats and emaciation. A positive diagnosis of the disease may be established by the constant finding of *Monilia* in the sputum. Likewise, certain species of the genus *Sporotrichum* are known to be pathogenic to man. These may produce granulomatous processes, termed sporotrichosis, in the skin and mucous membranes and in the bronchopulmonary and other systems of the body. Also certain species of *Blastomyces*, *Actinomyces* and *Aspergillus* are included among the different types of fungi reported to be pathogenic to man, the disease processes again involving particularly the ear, nose, throat and respiratory tract.

Because of the increasing numbers of reported occurrences of fungous infections in man, Whalen<sup>1</sup> has out-

1. Ryle, J. A.: Anorexia Nervosa, *Lancet* 2: 893 (Oct. 17) 1936.

1. Whalen, E. J.: Pathogenic Fungi, *Arch. Otolaryng.* 21: 436 (Oct.) 1936.

lined procedures for the simple and rapid examination of material suspected to contain any of the more common types of pathogenic fungi. He provides also a discussion of some of the accepted methods of treatment of these diseases. Obviously, the determination of the identity of the causative fungus is necessary to a correct diagnosis and the successful treatment of the disease.

## Current Comment

### THE NEW BULLETIN

As was noted in a recent issue of *THE JOURNAL*, the Board of Trustees of the American Medical Association has decided to conclude publication of the *American Medical Association Bulletin* with the issue for December 1936 and to substitute for it a special publication, the first issue of which will appear with *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*, Jan. 2, 1937. The new publication is to be known as the *Bulletin of the American Medical Association*. It will comprise approximately eight pages in each issue and will be published as a part of *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* each week. The new publication is to be devoted to the economic, business, organizational and social aspects of medical practice. Among early features already scheduled are a series of articles describing the headquarters office of the American Medical Association and the work of the various departments; a series of articles on rural medical service in the United States, discussing this service as a whole as well as by individual states; a considerable amount of material describing new forms of medical practice in various parts of the country, and also official announcements and bulletins relative to the work of various committees, councils and official bodies of the Association. One section of the *Bulletin* will be devoted to the Woman's Auxiliary. The *Bulletin* will be edited as a part of *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*. Those desiring to submit manuscripts dealing with the phases of medicine here mentioned may submit them to the *Bulletin*. It is proposed also to feature as a part of this publication a history of the American Medical Association, to be published serially, and the results of much of the work of the Bureau of Medical Economics.

### THE ATLANTIC CITY SESSION—1937

The annual session of the American Medical Association that was held in Atlantic City in 1935 was no doubt the best attended medical meeting ever held anywhere in the world. More than 8,400 physicians registered and the complete registration, including the wives of physicians, exhibitors and others taking part in the session, might well have made the attendance exceed 12,000. Now the Association is scheduled to return to Atlantic City for its annual session in 1937. The Council on Scientific Assembly, the chairmen and the secretaries of the various sections and officers of the Association met in the headquarters office in Chicago recently to consider some of the plans for this meeting.

The prospects already indicate a session notable in many different ways. The invited guests include physicians from various foreign countries conspicuous for their contributions to the advancement of medical science. The officers of the various sections have been besieged by applicants for places on the programs. The Scientific Exhibit is also in receipt of great numbers of applications and there will be subsidized exhibits on anesthesia and on fractures. The Council on Scientific Assembly has arranged for several general sessions, which will include clinical demonstrations, graduate lectures, talking motion pictures, and a special general assembly on the subject of the diagnosis and treatment of syphilis. The session will, moreover, be replete with entertainment which only a place like Atlantic City can provide.

### THE CENTENNIAL OF EMORY UNIVERSITY

The November issue of the *Journal of the Medical Association of Georgia* is devoted to the commemoration of the School of Medicine of Emory University and its direct predecessors. The charter for the Atlanta Medical College, which eventually became the Emory University School of Medicine, was granted by the legislature in 1854. After a somewhat stormy career, characteristic of many of the early medical colleges in this country, the entire holdings of the Atlanta Medical College were deeded to Emory University on June 15, 1915. Since that time the medical department has functioned as an integral part of the university. The history as well as the present high-ranking nature of the departments of the School of Medicine, as recorded in this issue of the *Journal of the Medical Association of Georgia*, furnishes stimulating reading and is characteristic of many of the finer medical developments in this country.

### PRODUCTION OF IODINE

Despite the recognition that iodine is indispensable to physiologic well being, that it plays a part in therapeutics and that it finds important use in industry, it is more or less surprising that little of this important element was produced in the United States prior to 1932. This country was dependent on a foreign monopoly for its supply. During the World War attempts were made to make iodine by the extraction of seaweed, but the quantities produced were small and this type of manufacture has been largely discontinued. A recent comment<sup>1</sup> on a report of the Chemical Division of the Department of Commerce indicates that this country has recently assumed a leading position in the production of iodine. During 1935 the sale of this element by producers amounted to 245,700 pounds, and for the past four years it has averaged 276,500 pounds annually. The source of the iodine is salt brine and the waters from oil wells, the most successful projects being located in California. This rapid industrial chemical development has raised the United States from an essentially dependent nation as concerns iodine to the world's second largest producer.

1. J. Indust. & Engin. Chem., News Edition 14: 389 (Oct.) 1936.

## Association News

### RADIO BROADCASTS

The American Medical Association and the National Broadcasting Company are presenting the second series of dramatized health broadcasts under the title *Your Health*. The first broadcast in the new series, the thirty-second dramatized cooperative broadcast under the title *Your Health*, was given October 13. The theme for 1936-1937 differs slightly from the topic in the first series, which was "medical emergencies and how they are met." The new series is built around the central idea that "100,000 American physicians in great cities and tiny villages, who are members of the American Medical Association and of county and state medical societies, stand ready, day and night, to serve American people in sickness and in health."

The program will go out on the Blue network instead of on the Red network, as originally announced.

The topics are announced monthly in advance in *Hygeia*, the Health Magazine, and three weeks in advance in each issue of *THE JOURNAL*. The topics and speakers for the next three programs are:

December 22. The Gift of Health. Morris Fishbein, M.D.  
December 29. Health Assets and Liabilities. W. W. Bauer, M.D.  
January 5. "Smog." W. W. Bauer, M.D.

The time of the broadcast is Tuesday afternoon at 4 o'clock central standard time (5 o'clock eastern time, 3 o'clock mountain time, 2 o'clock Pacific time).

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

### ALABAMA

**Dr. McLester Appointed Professor of Medicine.**—Dr. James S. McLester, Birmingham, has been named professor of medicine at the University of Alabama School of Medicine. He is an alumnus of the university, class of 1896, and a recent Past President of the American Medical Association. Other promotions include:

Dr. John Howard Ferguson to associate professor of physiology and pharmacology.  
Albert S. Harris, Ph.D., assistant professor of physiology and pharmacology.  
Dr. Edgar Gilmore Givhan Jr., associate clinical professor of medicine.  
Dr. James B. McLester, associate clinical professor of medicine.

### ARIZONA

**Annual Registration Due January 1.**—Every person practicing medicine, surgery or osteopathy in Arizona is required by law to pay annually on or before January 1, to the board of medical examiners, a renewal license fee of \$3. Any licensee who does not renew his license as required above is to be penalized \$1 for each day that he practices without a renewal license, not to exceed \$50. The board of medical examiners is to revoke the license of any licensee who fails to renew his license for three successive years.

### CALIFORNIA

**New Mental Hospital Unit.**—The first unit of a new hospital for mental disease at Camarillo, Ventura County, was formally opened October 12. The group of buildings, including the men's unit, was constructed at a cost of \$1,380,000. When completed, the institution will have cost \$7,000,000. The woman's unit is the next section to be erected. There are now 160 patients in the hospital.

**Society News.**—The Los Angeles County Medical Association has organized a speakers' bureau. At a meeting of the council of the society, November 2, the plan to obtain a copy of the bust of Dr. Joseph P. Widney, owned by the University of Southern California Medical School, was approved; it will be placed in the association's building. A plan to have members of the society use the words "Member—L. A. County Medical Assn." under their names on their office doors was also approved.—Dr. Otto Barkan, San Fran-

cisco, discussed "An Operation for Chronic Glaucoma" before the Los Angeles Society of Ophthalmology and Otolaryngology, November 30.—Dr. Edmund W. Butler, San Francisco, addressed the Sacramento Society for Medical Improvement recently on diagnosis and treatment of injuries of the chest and abdomen.—At a meeting of the San Bernardino County Medical Society in San Bernardino, October 6, the program was devoted to presentations by "Pioneers of Medicine in the San Bernardino Valley"; Drs. Thomas M. Blythe, Redlands, licensed in 1888; Marie A. Bennette, San Bernardino, 1886; Joseph A. Champion, Colton, 1895; John N. Baylis, San Bernardino, 1887, and William A. George, Loma Linda, 1911.—A recent meeting of the San Joaquin County Medical Society was addressed, among others, by Dr. Laurence R. Taussig, San Francisco, on "Common Skin Diseases and Their Treatment."—At a meeting of the Tulare County Medical Society in Visalia, September 6, Dr. Theodore L. Althausen, San Francisco, discussed "Recent Advances in Diagnosis and Treatment of Gallbladder Disease."

### COLORADO

**Society News.**—The Northeast Colorado Medical Society was addressed at a meeting in Sterling, November 12, by Drs. George P. Lingenfelter, Charles B. Kingry and Sanford Withers, the state society's cancer team, on "Clinical Diagnosis of Early Cancer." All are from Denver.—At a meeting of the Pueblo County Medical Society, November 17, in Pueblo, Dr. Herman Schwatt, Spivak, discussed "Collapse Therapy in Tuberculosis."

### CONNECTICUT

**Dental Program.**—The state department of health has instituted a dental program in the schools in an experimental area comprising eleven towns, including classroom talks, group instruction, individual examinations and prophylaxis. The work has been completed in three grades in four schools; a fifth is about to be completed, and the work is under way in two more. The program is an extension of the annual well child conferences and summer roundups and is planned to include health talks and the showing of films.

**Personal.**—Dr. Paul H. Brown, health officer of East Haven, has been appointed an epidemiologist in the bureau of communicable diseases, state department of health, on a part time basis; he succeeds Dr. John S. Cunningham, Hartford, who is on leave of absence for one year at the Harvard School of Public Health.—Dr. Wilmar M. Allen, recently appointed director of the Hartford Hospital, was guest of honor at a dinner given by members of the staff, November 5. Dr. Claude W. Munger, Valhalla, N. Y., president of the American Hospital Association, was guest speaker.

**Special Meeting on Pneumonia and Syphilis.**—The Connecticut Public Health Association held a meeting in Waterbury, December 16, to discuss pneumonia and syphilis. A symposium on pneumonia was held in the morning with Drs. Francis G. Blake and Joseph I. Linde, New Haven, and Alfred L. Burgdorf, Hartford, as the speakers, while the symposium on syphilis in the afternoon was presented by Drs. Raymond A. Vonderlehr, assistant surgeon general, U. S. Public Health Service; John L. Rice, health commissioner of New York; Maurice J. Strauss, New Haven; Karl T. Phillips, Putnam, and Henry P. Talbot, Hartford. Other speakers on the program included Drs. Millard Knowlton, Hartford, and Allan J. McLaughlin, U. S. Public Health Service. The session closed with a sound motion picture, "For All Our Sakes."

### DELAWARE

**Pathologic Conferences.**—A series of pathologic conferences opened at the Delaware Academy of Medicine, Wilmington, November 6, on diseases of the kidneys. The second was given December 4 on diseases of the gallbladder. Others in the series, which are of interest to practitioners in all branches of medicine and surgery, are: January 8, carcinoma of the lung; February 5, cardiovascular diseases, and March 5, diseases of the brain.

### DISTRICT OF COLUMBIA

**Dr. Cumming Receives Hartley Medal.**—Dr. Hugh S. Cumming, surgeon general, U. S. Public Health Service, retired, was presented with the Marcellus Hartley Gold Medal "for eminence in the application of science to the public welfare" at the annual meeting of the National Academy of Sciences, November 17, in Chicago. Dr. Cumming, now 67 years old, retired January 31 after sixteen consecutive years as surgeon

general. He had been identified with the service since 1894. He was president of the American Public Health Association in 1931.

**Personal.**—Dr. Earl B. McKinley, dean and professor of bacteriology, George Washington University School of Medicine, has been granted sabbatical leave for the second semester; he will leave in January for the Orient, where he will conduct research on leprosy under the auspices of the American Leprosy Foundation, formerly the Leonard Wood Memorial. Later, traveling around the world, Dr. McKinley will gather material concerning the geographic distribution of disease for inclusion in a volume, to follow one on the geography of disease, entitled "A Cartography of Disease," now in preparation under a grant from the Carnegie Institution of Washington, D. C. Dr. McKinley will return to Washington in September 1937.

**Annual Dinner of Smith-Reed-Russell Society.**—Dr. Charles Franklin Craig, professor of tropical medicine, Tulane University of Louisiana School of Medicine, New Orleans, gave the oration at the annual dinner of the Smith-Reed-Russell Society, George Washington University School of Medicine, Washington, November 17. His subject was "Factors Influencing the Transmission of Malaria." Dr. Ernest Muir, secretary-general of the International Leprosy Association, gave the second lecture in the Smith-Reed-Russell series for 1936 on this occasion, entitled "The Reaction of the Tissues to the Leprosy Organism." The first lecture in the series was delivered by Dr. Richard P. Strong, professor of tropical medicine, Harvard University Medical School, Boston, on "The Parasitic and Bacillary Dysenteries."

## FLORIDA

**Annual Registration Due January 1.**—Every practitioner of medicine and surgery holding a license to practice in Florida is required by law to register annually on or before January 1, with the secretary of the state board of health, and at that time to pay a fee of \$1. A licentiate failing to register annually is liable to a fine of not more than \$50.

**Society News.**—At a meeting of the DeSoto-Hardee-Highlands County Medical Society in Sebring, October 13, Drs. Spencer A. Folsom and Frank D. Gray, Orlando, discussed cardiac disease and renal denervation, respectively.—Dr. Turner Z. Cason discussed heart block before the Duval County Medical Society, October 6, in Jacksonville.—At a meeting of the Pinellas County Medical Society recently, Dr. Arnold S. Anderson, St. Petersburg, spoke on oxygen therapy.—Dr. Frederick Clifton Moore, Tallahassee, addressed the Suwannee River Medical Association, November 13, on "Indications and Limitations of Artificial Pneumothorax in the Treatment of Pulmonary Tuberculosis."

## ILLINOIS

**Society News.**—The Sangamon County Medical Society was addressed in Springfield, December 3, by Dr. Arthur Steindler, Iowa City, on "Low Back Pain: Contribution to Differential Diagnosis," and Hugh J. Graham Jr., J.D., "The Social Security Act."

### Chicago

**Window Exhibit.**—The present exhibit of the Chicago Medical Society in the Marshall Field and Company Annex Building is based on a recent report issued by the state department of health which showed that during the Christmas 1935 holidays the following cases in Illinois were in quarantine:

Smallpox .....	25	Whooping cough.....	851
Typhoid .....	27	Scarlet fever.....	2,451
Diphtheria .....	304		
		Total .....	3,622

The exhibit shows a child quarantined at home with scarlet fever, looking out at other children playing in the snow. Signs in the window say "This child was not protected" and a card by the children outdoors says "These children are protected; are yours?"—A poster printed in red and green says "Christmas Gifts for Children Should Include Immunization Against Contagious Diseases."

**Society News.**—Dr. Milton B. Cohen, Cleveland, discussed "The Importance of the Recognition of the Minor Allergies" before the Chicago Medical Society, December 2. Drs. Isidor Harrison Tumpey and Harry L. Huber spoke on "Allergy in Childhood" and "General Treatment of Allergy" respectively.—At a meeting of the Chicago Surgical Society, December 4, the speakers included Drs. Henry N. Harkins on "Mesenteric Thrombosis" and Harry E. Mock, "Certain Intra-Abdominal Lesions Simulating Malignancy."—Dr. Heinrich Finkelstein, director, Municipal Children's Hospital, Berlin, Germany, addressed the Chicago Laryngological and Otological

Society, December 7, on "Mastoiditis in Infants."—Dr. Percy Starr Pelouze, Philadelphia, among others, discussed gonorrhea before the Chicago Urological Society, November 19.—Dr. William P. Healy, New York, addressed the Chicago Gynecological Society, December 18, on "The Use of Radium and X-Rays in Gynecology."

## IOWA

**Society News.**—At a meeting of the Cedar County Medical Society in Tipton, October 16, Drs. Fred M. Smith, Iowa City, discussed treatment of cardiac failure, and Arthur W. Erskine, Cedar Rapids, the cancer problem in Iowa.—Dr. A. Fred Watts, Creston, addressed the Dallas-Guthrie Counties Medical Society, October 15, in Panora, on infant feeding, and Dr. Carl E. Sampson, Creston, eye, ear, nose and throat conditions in general practice. Dr. John H. Peck, Oakdale, discussed the tuberculin reactions in his tests of various patients in the Panora schools at a luncheon meeting of the society and the woman's auxiliary.—The Fremont County Medical Society was addressed in Sidney, October 19, by Drs. Jack V. Treynor on immunization with special reference to scarlet fever and measles, and Karl R. Werndorff, Council Bluffs, different forms of Colles' fracture and the treatment.—Dr. Homer W. Scott, Fort Dodge, addressed the Hamilton County Medical Society in Webster City, October 26, on "Transurethral Prostatic Resection."—At a recent meeting of the Johnson County Medical Society, Oakdale, Dr. Evarts A. Graham, St. Louis, discussed bronchogenic carcinoma.—The Montgomery County Medical Society was recently addressed in Red Oak by Drs. Jay C. Cooper, Villisca, on medical legislation, and Harold C. Bastron, Red Oak, lymphoid tissues of the nasopharynx.—A special scientific meeting of the Des Moines Academy of Medicine and the Polk County Medical Society was addressed, October 13, by Drs. Joseph A. Weinberg, Omaha, on bronchiectasis, and Harold E. Eggers, Omaha, experimental study of cancer.

## KANSAS

**Personal.**—Dr. Francis A. Carmichael, formerly superintendent of the Osawatimic State Hospital, has been appointed chief clinical adviser of the six state hospitals in Missouri; he will make his home in Fulton.—The Brown County Medical Society held a party in honor of Dr. Willard W. Nye, Hiawatha, September 26, celebrating his ninetieth birthday.—Dr. Henry J. Deaver, Sabetha, has been appointed health officer of Nemaha County, succeeding Dr. Frederick S. Deem, Oneida, who resigned to become physician for a CCC camp at Kingman.

**Society News.**—Dr. Peter T. Bohan, Kansas City, among others, addressed the Clay County Medical Society in Clay Center, October 14, on "Uses and Abuses of Internal Medicine."—A symposium on normal delivery was presented before the Coffey County Medical Society in Burlington, October 22, by Drs. John H. Rinehart, Lebo; Albert N. Gray, Burlington; Henry M. Benning, Waverly, and Hubert G. Her-ring, LeRoy.—At a joint dinner meeting of the Marion, Harvey and McPherson county medical societies, October 28, in Marion, Drs. Leroy A. Calkins, Kansas City, Mo., among others, spoke on "Cancer of the Cervix," and Vincent T. Williams, Kansas City, Mo., "The Abdominal Masquerades of Heart Disease."

## LOUISIANA

**Annual Renewal Due January 1.**—Every practitioner of medicine and surgery holding a certificate to practice in Louisiana is required by law to have his certificate renewed annually, on or before January 1, by the secretary-treasurer of the state board of medical examiners, and at that time to pay a fee of \$2. The board may by unanimous vote revoke any certificate not renewed.

**Health at New Orleans.**—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of 37 million, for the week ended December 5, indicate that the highest mortality rate (21.3) appeared for New Orleans and that the rate for the group of cities as a whole was 12.2. The mortality rate for New Orleans for the corresponding period last year was 19.4 and for the group of cities, 12.2. The annual rate for eighty-six cities for the forty-nine weeks of 1936 was 12 as against a rate of 11.3 for the corresponding period of the previous year. Caution should be used in the interpretation of these weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

## MASSACHUSETTS

**Medal to Dr. Sellards.**—The Laveran Gold Medal of the Société de pathologie exotique of Paris has been conferred on Dr. Andrew W. Sellards, associate professor of tropical medicine, Harvard University Medical School, Boston. Dr. Sellards has been associated with French investigators in the study of yellow fever since 1927. This work has culminated in the development of an effective vaccine, which has now been employed for the protection of more than 20,000 persons. Dr. Sellards first demonstrated that the virus of yellow fever could be preserved in vitro and transported, and in 1928 he brought the first strain from Africa, which was established at once in several laboratories in Europe, London, New York and Boston.

**Changes in the Faculty at Tufts.**—New appointments to the faculty of Tufts College Medical School, Boston, include those of Dr. John L. Jacobs as associate professor of bacteriology, and Drs. William E. Browne and Archibald McK. Fraser as clinical professors of surgery. The following promotions have been made on the faculty:

Dr. James J. Hepburn, professor of surgery to succeed Dr. Horace Wynne, now professor emeritus.  
Dr. Benjamin Sachs, professor of ophthalmology, succeeding Dr. Edward K. Ellis, now professor emeritus.  
Dr. James M. Baty, assistant professor of pediatrics.  
Dr. Francis C. McDonald, assistant professor of pediatrics.  
Dr. Arthur Berk, assistant professor of psychiatry.  
Dr. Otto J. Hermann, clinical professor of surgery.  
Dr. Harry H. Powers, Ph.D., assistant professor of biochemistry.  
Dr. Louis A. O. Goddard, clinical professor of orthopedics.  
Dr. Armin Klein, clinical professor of orthopedics.  
Dr. John D. Adams, assistant professor of orthopedics.

Dr. Frederick W. Stetson has been made professor emeritus of medicine.

## MICHIGAN

**Memorial to Dr. Harison.**—A bronze tablet placed in the War Memorial Hospital, Sault Ste. Marie, in memory of the late Dr. Beverly Drake Harison, Detroit, contains the following inscription:

BEVERLY DRAKE HARISON  
1855-1925

PROMINENT SAULT STE. MARIE PHYSICIAN.  
FOREMOST WORKER IN MICHIGAN MEDICAL LEGISLATION.  
ONE OF THE FOUNDERS OF THE UPPER PENINSULA  
MEDICAL SOCIETY.  
PRESIDENT OF THE MICHIGAN STATE MEDICAL  
SOCIETY IN 1904.  
SECRETARY OF THE MICHIGAN STATE BOARD OF REGIS-  
TRATION IN MEDICINE FOR TWENTY-FOUR YEARS.  
ERECTED BY THE MICHIGAN STATE MEDICAL SOCIETY  
AND THE CHIPPEWA COUNTY MEDICAL SOCIETY.

## NEBRASKA

**Society News.**—At a meeting of the Lancaster County Medical Society, October 20, the speakers were Drs. Edward W. Rowe and John Marshall Neely, Lincoln, on "Primary Malignancy of the Small Intestine" and Czar C. Johnson, Lincoln, on "The Healing Arts," a review of Nebraska medical laws.—The autumn meeting of the Third Councilor District Medical Society was held at Tecumseh, November 20, with the following speakers, all of Omaha: Drs. Charles W. McLaughlin Jr., on "Management of Peripheral Vascular Disease"; Olin J. Cameron, "A Practical Skin Clinic"; Frank Conlin, "Diabetic Complications"; David P. Findley, "Obstetric Analgesia and Anesthesia." Following a dinner Dr. Albert F. Tyler, Omaha, discussed "Treatment of Malignancies of the Face and Mouth" and Mr. M. C. Smith, executive secretary of the Nebraska State Medical Association, field activities of the association.—At a meeting of the Madison Six County Medical Society in Norfolk, November 17, the speakers were Drs. Abram E. Bennett, Omaha, on "Management of Psychoneurotic Patients in General Practice"; Theodore M. Barber, Norfolk, "A Review of Five Years of Musical Therapy at the Norfolk State Hospital," and Richard H. Young, Omaha, "Early Signs and Recent Advancement in the Treatment of Psychiatric States."

## NEW JERSEY

**Personal.**—Dr. Robert A. Kilduffe, Atlantic City, has been appointed editor of the *American Journal of Clinical Pathology* to succeed Dr. Thomas B. Magath, Rochester, Minn., who has served two three-year terms. The journal is the official organ of the American Society of Clinical Pathologists.—Dr. Clarence Garabrant, Atlantic City, recently celebrated his fiftieth anniversary in the practice of medicine and his eightieth birthday.

**Society of School Physicians.**—The New Jersey Association of School Physicians was organized at a meeting in Newark, November 9, with Dr. Harry B. Silver, Newark, as president and Dr. Aaron H. Horland, Newark, as secretary. Objectives outlined are medical leadership in health education and service in the public schools, standardization of health services throughout the state, improvement in the health service rendered by school physicians, establishment of a special section for school physicians in the state and county societies, and to act as a clearing house for statistical data. The next meeting will be held at Atlantic City in conjunction with the annual meeting of the Medical Society of New Jersey in April 1937.

## NEW YORK

**Annual Registration Due January 1.**—Every practitioner of medicine and surgery in New York is required by law to apply annually, on or before January 1, to the secretary of the board of medical examiners for a certificate of registration, on application forms furnished by him, and to pay at that time a fee of \$2. The law authorizes the secretary of the board to permit secretaries of duly incorporated medical societies to act as his representatives, to receive and transmit to him such applications and fees. Practitioners are liable to severe penalties for failing to register and for continuing in practice thereafter.

**Society News.**—At a meeting of the Rensselaer County Medical Society, November 10, the speakers were Drs. Eugene F. Connally, on "Carcinoma of the Colon"; Irwin Johnston, "Diagnosis of Chronic Infections of the Tonsils in Relation to Indications for Operation in Cases of Focal Infection," and Leo S. Weinstein, "Chronic Osteomyelitis." All are from Troy.—Drs. Gordon D. Hoople and Frederick S. Wetherell, Syracuse, addressed the Syracuse Academy of Medicine, December 15, on "Bronchoscopic Diagnosis of Carcinoma of the Lung" and "What Surgery Can Do in Carcinoma of the Lung" respectively.—Dr. James E. King, Buffalo, addressed the Broome County Medical Society, Binghamton, December 8, on "Office Practice of Gynecology."

## New York City

**County Society Lecture Bureau.**—The Medical Society of the County of New York has formed a lecture bureau to provide speakers for lay organizations and is now developing a list of physicians who are willing to give addresses. Members of the committee in charge of the bureau are Drs. Clarence G. Bandler, Peter Irving and Alfred M. Hellman.

**Women Organize for Cancer Control Campaign.**—Representatives from seven Eastern states met in New York November 20 to organize the Women's Field Army, which is being sponsored by the American Society for the Control of Cancer in a campaign of education addressed to the public. "Commanders" from Maine, New Hampshire, Delaware, New York, Pennsylvania, Rhode Island and West Virginia heard addresses by Mrs. Grace Morrison Poole, national adviser to the movement, and Clarence C. Little, Sc.D., director of the American Society for the Control of Cancer. The drive will be continued till March 27, the last week being devoted to enlistment of women as volunteers. After that time the army will go on a permanent basis and will conduct an educational campaign the year round.

**Dr. Northrop Wins Chandler Medal.**—John Howard Northrop, Ph.D., of the Rockefeller Institute for Medical Research, Princeton, N. J., branch, has been awarded the Charles Frederick Chandler Medal of Columbia University for 1936, it was announced December 7, in recognition of fundamental discoveries concerning bacteria, the constitution of protein and the chemistry of digestion. He will deliver the Chandler Lecture in the spring. The medal was founded in 1910 in honor of Professor Chandler, who taught at Columbia and was a pioneer in industrial chemistry. Dr. Northrop, who studied under Professor Chandler, received the degree of doctor of philosophy in 1915 at Columbia and has been associated with the Rockefeller Institute since 1916. During the tercentenary celebration at Harvard University in September he received the honorary degree of doctor of science.

## NORTH CAROLINA

**District Meeting.**—The Eighth District Medical Society met at Leaksville, November 24, with the following speakers: Drs. Roscoe L. Wall, Winston-Salem, on "Cyclopropane-Avertin Anesthesia"; Merle D. Bonner, Jamestown, "Tuberculosis in Children"; Julian M. Ruffin, Durham, "Bloody Diarrhea—Etiology and Treatment"; James F. Marshall, Winston-Salem, "Gynecologic Aspects of Backache," and

Marion Y. Keith, Greensboro, "Pyuria in Infants and Children." Dr. Thurman D. Kitchin, Wake Forest, spoke on medical history and Dr. Charles F. Strosnider, Goldsboro, president of the state society, made an address.

#### NORTH DAKOTA

**Annual Registration Due January 1.**—Every practitioner of medicine and surgery holding a license to practice in North Dakota is required by law to register annually on or before January 1, with the secretary-treasurer of the board of medical examiners, and at that time to pay a fee of \$5 if a resident of North Dakota, or \$2 if a non-resident. A practitioner may not lawfully practice if he has not registered. If he does so his license may be revoked and can be reinstated on the payment of unpaid fees and 50 cents for each month of default.

#### OHIO

**Faculty Changes at Ohio State.**—Dr. Charles A. Doan, professor of medicine and medical research, Ohio State University College of Medicine, has been appointed chairman of the department, which has been merged with the medical research department. Among other additions to the faculty are those of Drs. Carl V. Moore as assistant professor of medicine (hematology); George T. Harding III, assistant clinical professor of medicine (psychiatry); Oram C. Woolpert, assistant professor of medicine (infectious diseases); Louis J. Roth, assistant professor of clinical surgery; James K. W. Ferguson and Emil Bozler, Ph.D., assistant professors of physiology, and Lieut. Col. Frank H. Dixon, Medical Corps, U. S. Army, professor of military science.

#### PENNSYLVANIA

**Society News.**—Dr. Charles L. Brown, Philadelphia, presented graduate seminars before the Lycoming County Medical Society, Williamsport, December 11, on "Digitalis, Diuretics and Diet in the Management of Cardiac Failure" and "Appraisal of the Therapeutic Measures in the Management of Pneumonia."—Dr. John Huber Wagner, Pittsburgh, addressed the Fayette County Medical Society, Uniontown, December 10, on treatment of fractures.

##### Philadelphia

**Fortieth Anniversary of Pediatric Society.**—The Philadelphia Pediatric Society celebrated its fortieth anniversary at a banquet at the Barclay, December 8. The program included the following speakers: Drs. Herbert B. Wilcox, New York, on "Today's Requirements of the Practicing Pediatrician"; John Lovett Morse, Boston, "The Future of Pediatrics"; Albert Graeme Mitchell, Cincinnati, "Timely Comments on Pediatrics," and Henry H. Perlman, "The Philadelphia Pediatric Society, A Retrospect and Introspect."

**Society News.**—Under the auspices of the Laënnec Society of Philadelphia, Dr. Carl B. Semb, Oslo, Norway, gave an address at the Pennsylvania Hospital, December 4, on "Surgical Treatment of Pulmonary Tuberculosis."—The program of the Metabolic Association of Philadelphia, December 4, was devoted to discussion of the high-carbohydrate, low-fat diet in the treatment of diabetes, with the following speakers: Drs. E. Roland Snader Jr., Edward S. Dillon, Howard W. Schaffer and Joseph T. Beardwood Jr. and Miss Henrietta Pribnow.—Dr. Arthur Bruce Gill delivered the annual oration of the Philadelphia Academy of Surgery, December 7, on "The Surgeon's Hands."

**State Society Honors Dr. Hamill.**—At the annual meeting of the Medical Society of the State of Pennsylvania in Pittsburgh in October, the house of delegates of the society on the recommendation of the board of trustees presented to Dr. Samuel McC. Hamill, Philadelphia, an illuminated manuscript in recognition of his service as chairman of the State Emergency Child Health Committee during the past three years. Dr. Hamill, who is 72 years old, graduated from the University of Pennsylvania School of Medicine in 1888 and has practiced in Philadelphia since 1890. He was professor of diseases of children at the old Philadelphia Polyclinic and College for Graduates in Medicine from 1901 to 1919 and at the University of Pennsylvania Graduate School of Medicine, 1919-1920. He has been president of the American Pediatric Society (1913-1914); the American Child Health Association (1931-1935); the American Academy of Pediatrics (1932) and the American Association for the Study and Prevention of Infant Mortality (1915-1916). He was the first chairman of the section on pediatrics of the Medical Society of the State of Pennsylvania and was chairman of the Section on Diseases of Children of the American Medical Association in 1911. In 1930 he served as chairman of Section I on Medical Service of Presi-

dent Hoover's White House Conference on Child Health and Protection and chairman of the follow-up committee on that section.

#### RHODE ISLAND

**Women's Cancer Organization.**—Dr. George T. Pack, New York, was the guest speaker at a meeting in Providence November 16 launching the Rhode Island division of the "Women's Field Army for the Control of Cancer," a national campaign under the auspices of the American Society for the Control of Cancer. The organization will carry on a campaign for early diagnosis and treatment and for public support of the educational work.

**Society News.**—Drs. James P. O'Hare, Boston, and Vincent J. Oddo, Providence, addressed the Providence Medical Association, December 7, on "Interesting Problems in Hypertension and Bright's Disease" and "Transurethral Resection of the Prostate Gland—A Conservative Evaluation" respectively. Drs. William T. Green, Boston, and Franklin P. Lowry, Newton, addressed the association, November 2, on "The Practical Use of Physical Therapy."

#### TEXAS

**Society News.**—The Texas Club of Internal Medicine held a meeting at the University of Michigan Medical School, Ann Arbor, October 8-10, with a program of lectures, ward rounds and visits to the laboratories of metabolism and electrocardiography. Dr. Lee Rice, San Antonio, is president of the club.—Drs. George W. McCoy, Washington, D. C., and Royall M. Calder, San Antonio, addressed the Bexar County Medical Society, San Antonio, October 8, on "Etiology, Incidence and Treatment of Undulant Fever" and "Local Experiences in the Diagnosis and Treatment of Undulant Fever" respectively.—Drs. James H. Shane and Sim Driver, Dallas, addressed the Cooke County Medical Society, Gainesville, October 12, on "Care of the Prostatic Patient" and "Fractures of the Neck of the Femur" respectively.—Dr. Henry Grady Bevil, Beaumont, addressed the Jefferson County Medical Society, Beaumont, November 9, on "Use of Liver Treatment in Obscure Deficiency Diseases."—Dr. William L. Parker, Wichita Falls, was elected president of the Texas Association of Obstetricians and Gynecologists at a meeting in Dallas November 1.

#### VIRGINIA

**Personal.**—Dr. Leta J. White, Petersburg, was elected chairman of the Women Physicians of the Southern Medical Association at the annual meeting in Baltimore in November.—Dr. Porter P. Vinson, Rochester, Minn., has been appointed professor and head of the department of bronchoscopy, esophagoscopy and gastroscopy at the Medical College of Virginia, Richmond. He will also be in charge of chronic pulmonary diseases at Memorial Hospital.

**University News.**—The third annual graduate course in ophthalmology and otolaryngology was held at the University of Virginia Department of Medicine, October 27-30. Among the guest lecturers were Drs. Harry S. Gradle, Chicago; Bernard Samuels, New York; Gabriel Tucker, Philadelphia, and John R. Richardson, Boston.—Dr. Theodore L. Squier, Milwaukee, addressed the University of Virginia Medical Society, November 16, on "Bone Marrow Insufficiency with Especial Reference to Granulocytopenia."

**Society News.**—Dr. Charles H. Patterson, Lynchburg, addressed the Lynchburg Academy of Medicine, October 5, on pruritus.—At a meeting of the Roanoke Academy of Medicine, October 5, Dr. Littleton Davis, among others, spoke on "Nonsurgical Pyloric Stenosis."—The Dickenson-Buchanan Counties Medical Society was reorganized at a meeting at Haysi, recently, with Drs. Alexander S. Richardson, Grundy, as president, and Tivis C. Sutherland, Haysi, secretary.—At the quarterly meeting of the Southside Virginia Medical Society in Petersburg, December 8, the speakers were Drs. Martillus H. Todd, Norfolk, on "Traumatic Surgery"; Robert Mazet Jr., Norfolk, "Development and Use of Traction in the Treatment of Fractures"; W. Ambrose McGee, Richmond, "Allergy of the Upper Respiratory Tract"; Wright Clarkson, Petersburg, "Uses and Abuses of Radium in Gynecology," and Eugene L. Lowenberg, Norfolk, "Treatment of Varicose Veins by Multiple Ligations and Controlled Injections."

#### WASHINGTON

**University News.**—A new \$200,000 infirmary for the health service of the University of Washington, Seattle, has been opened recently, with improved facilities for outpatient service and full hospital equipment for care of inpatients, except surgery.

## GENERAL

**Society for Clinical Research.**—Dr. David P. Barr, St. Louis, was elected president of the Central Society for Clinical Research at its ninth annual meeting in Chicago, November 6-7, and Dr. Lawrence D. Thompson, St. Louis, was reelected secretary. Speakers included:

Drs. J. Arnold Bagen and Lorin D. Whittaker, Rochester, Minn., *Studies of the Function of the Small Intestine*.  
Dr. Robert A. Kehoe, Cincinnati, *The Alimentary Elimination of Normally Ingested Lead*.  
Dr. Henry N. Harkins, Chicago, *Plasma Hemorrhage*.  
Dr. Howard L. Alt, Chicago, *Experimental Iron Deficiency*.  
Dr. Elmer L. DeGowin, Iowa City, *Clinical Study of Serious Complications from Blood Transfusion*.

**Another New Journal—"Growth."**—Announcement has been made of the forthcoming publication of a scientific journal to be called *Growth*, for "studies of the basic factors, processes and functions concerned in growth as a fundamental property of nature." It will be published by contributors and subscribers "as a nonprofit cooperative medium for the integration of growth expressions through the basic sciences," according to the announcement. The managing editor is Prof. Norman J. Berrill, D.Sc., department of zoology, McGill University, Montreal. The editorial board is representative of various branches of scientific work. Publication will begin in January 1937 as a series of numbered fasciculi at irregular intervals, one volume a year.

**Congress of Railway Surgeons.**—Dr. William A. McMillan, Charleston, W. Va., was chosen president of the American Association of Railway Surgeons at the annual meeting in Chicago, November 5-7; he succeeded Dr. Don Deal, Springfield, Ill. Vice presidents are Drs. Mathew A. Tinley, Council Bluffs, Iowa; Herman A. Brennecke, Aurora, Ill., and Victor H. Horning, Chicago; Dr. Theodore L. Hansen, Chicago, was reelected treasurer, and Dr. Daniel B. Moss, Chicago, reelected secretary. The next annual meeting will be held at the Palmer House, Chicago, Sept. 20-22, 1937. The speakers included:

Dr. Vernon C. David, Chicago, *Obstruction of the Bowel Due to Lesions of the Rectum and Colon*.  
Dr. Philip H. Kreuscher, Chicago, *The Surgical Treatment of Arthritis*.  
Dr. Robert D. Schrock, Omaha, *Early Pathology in Bone Tumors*.  
Dr. Brennecke, *Treatment of Electrocuted Persons*.

**Congress of Physical Therapy, X-Ray and Radium.**—The second cruise of the Latin-American Congress of Physical Therapy, X-Ray and Radium will take place March 9-28, at Guatemala City, Guatemala. One boat will sail from Philadelphia March 9 and another from New Orleans March 10. The congress has been arranged for the week of the inauguration of the president of Guatemala and visitors will participate in the festivities at that time. There will be three scientific sessions, Tuesday morning and afternoon, March 16, and Saturday morning, March 20, at the National University School of Medicine, the intervening time to be spent in a trip to the interior of Guatemala. Physicians who wish to attend should apply to Dr. Norman E. Titus, 730 Fifth Avenue, New York, president of the congress, or to Dr. Cassius Lopez de Victoria, 1013 Lexington Avenue, executive director.

**Society for Study of Arthritis.**—The eighth annual meeting of the American Society for the Study of Arthritis was held in New York at the Waldorf-Astoria, December 3-5. The mornings were devoted to round table discussions and the afternoons to presentation of the following papers:

Dr. Benjamin H. Huggins, Evanston, Ill., *Nonarthritic Problems in Differential Diagnosis*.  
Dr. Raymond L. Jeffery, Seattle, *Résumé of Cases Treated with Complement-Fixing Antigens*.  
Dr. Carl R. Comstock, Saratoga Springs, *Regimen for Arthritis as Employed at Saratoga Springs*.  
Dr. Charles Murray Gratz, New York, *Fascial Adhesions*.  
Dr. Henry Warren Crowe, London, England, *Examples of Radiography in the Diagnosis and Control of Treatment of Arthritis*.  
Dr. Lazaros G. Hadjopoulos, New York, *Direct and Intermediate Pathways for Streptococcal Invasion*.

The society held an open meeting at the New York Academy of Medicine Thursday evening, December 3, with the following speakers: Drs. Crowe, on "Differential Sedimentation Test in Arthritis"; Ralph R. Mellon, Pittsburgh, "New Studies in the Dissociation of Hemolytic Streptococci," and Laurence H. Mayers, Chicago, "Drugs for Arthritis: A New One Each Week for Three Thousand Years." Dr. Reginald Burbank, New York, was reelected president; Dr. Hadjopoulos, New York, was elected vice president, and Dr. Charles H. McEnerney, Washington, D. C., reelected secretary.

**Support Requested for Army Medical Library.**—The Medical Library Association at its recent annual meeting adopted a resolution urging Congress to appropriate funds for the maintenance and development of the Army Medical Library. The resolution asked specifically that funds be appropriated for current medical books and periodicals; for the purchase of

back publications lost during years when the appropriation was inadequate; to make the collection and its *Index-Catalogue* as complete as possible, and to defray the cost of printing regularly each year not less than one volume of the *Index-Catalogue*. The association pointed out that the value and completeness of the *Index-Catalogue* depend on the completeness of the files of medical publications in the library and that in recent years the appropriation to the library has been wholly inadequate to provide for acquisition of current publications for use throughout the country and for inclusion in the index.

**Society News.**—At the seventeenth annual meeting of the Association of Surgeons of the Chesapeake and Ohio Railway at White Sulphur Springs, W. Va., November 6-7, speakers included Drs. Walter R. Griess, Cincinnati, on "Treatment of Gastric Ulcer with Special Reference to the Use of Emetine Hydrochloride"; Martillus H. Todd, Norfolk, Va., "Treatment of Pott's Fracture"; Claude C. Coleman, Richmond, Va., "Treatment of Acute Head Injuries with Special Reference to the Cases That Require Operation," and Francis A. Malmstone, Griffith, Ind., "Treatment of Diabetes Mellitus with Protamine Insulin." Dr. Halstead S. Hedges, Charlottesville, Va., was elected president.—Dr. Leroy S. Peters, Albuquerque, N. M., was chosen president-elect of the Southwestern Medical Association at its annual convention in El Paso, November 21. Dr. Chester R. Swackhamer, Superior, Ariz., was installed as president; Drs. Howell S. Randolph, Phoenix, and John W. Cathcart, El Paso, were elected vice presidents and Dr. Orville E. Egbert, El Paso, was elected secretary. The 1937 meeting will be in Phoenix. Dr. William L. Brown, El Paso, was made honorary life president of the association at this meeting.—The Central States Dermatological Association held its annual meeting in Cleveland, December 5. This association is made up of the dermatologic societies of Rochester, Buffalo, Pittsburgh, Cincinnati, Detroit and Cleveland.—The American Association on Mental Deficiency will hold its annual meeting in Atlantic City May 5-8, 1937. Dr. E. Arthur Whitney, Elwyn, Pa., is secretary.—The American Academy of Orthopedic Surgeons will hold its fifth annual convention in Cleveland, January 11-13, at the Hotel Cleveland.

**Arrests Made in the "Eyeswinding Racket."**—The U. S. Post Office Department has made the following arrests in its investigation of the "eyeswinding racket," also known as the "glimmer racket," which has been carried on throughout the country for several years:

Boyce Bateman  
Harold N. Baxley  
Samuel Birnstein  
Samuel Bluestine  
Iddien Reese Conner  
Herbert C. Crangle  
Lewis Fenburg  
Samuel F. Freedman  
John Gray  
William E. Hanecy  
Harry Herman Holtkamp

Lawrence B. Holtkamp  
Lewis Levy  
William Henry Londergon Jr.  
Frank Mackett Jr.  
J. C. Murphy  
Edward Robinson, alias Eddie A.  
William Shapiro  
Jerry Theeman  
Elliott George Wilkinson  
Mathew O. Wilkinson  
Curtis J. Yeager

All have been charged with violating either federal or state laws in the operation of the racket. THE JOURNAL published a news item concerning Birnstein, November 14, page 1643. Bluestine was sentenced to one year in jail. Gray was sentenced to ten years on the eyeswinding scheme and fifteen years for attempted murder, in the penitentiary at Huntsville, Texas. Murphy received a sentence of five years in the Huntsville prison. Crangle was arrested November 7 and removed to Norfolk, Va., where the indictment is pending. Londergon, said to be a resident of Chicago, was arrested in Carroll, Iowa, November 21, and sentenced at Montezuma, November 30, to serve seven years in the penitentiary at Fort Madison. Robinson also was arrested at Carroll, November 21, and held for removal to Asheville, N. C., where he is wanted on a federal charge in connection with a swindle in that state. In addition to the eyeswinding charge placed against these "fake eye specialists," the government has also accused them of using the mails to defraud. Three indictments have been returned against Mackett and others. The swindlers sent to Mackett the checks which they obtained from their victims and he deposited them in banks for collection, remitting the proceeds, less 10 per cent commission, to the swindlers. Mackett is an attorney in Milwaukee and in addition operates what is known as the Police and Sheriff's Association of America. In the latter operation he sends agents throughout the country to call on police chiefs and sheriffs and induce them to join his association, giving them free accident policies and in return procuring from the chiefs of police and sheriffs letters which are used in the solicitation of advertisements from the banks and business houses. Hanecy, indicted with Mackett in the collection of the checks, is also a lawyer. The postoffice department states that more than 100 men have been engaged in the "glimmer racket."

## FOREIGN

**Society News.**—The Norwegian Medical Association is celebrating its fiftieth anniversary this year. There are now 2,100 physicians in Norway, compared with about 600 in 1885. Dr. Jorgen H. Berner is secretary general of the association and joint editor of its journal.

**Research Council on Rheumatism.**—A British Empire Rheumatism Council was recently organized at a meeting at the Royal Society of Medicine in London with Lord Horder as chairman. The duke of Gloucester accepted an invitation to be president of the council; Dr. William S. C. Copeman was appointed honorary medical secretary and Sir Frank Fox organizing secretary. The object of the council is to organize research throughout the empire into the causes and means of treatment of rheumatism. It was pointed out that in Great Britain this disease is responsible for one sixth of the payments necessary under the national insurance act.

## Government Services

## Government Positions Open

The U. S. Civil Service announces open competitive examinations for three positions: senior medical officer in psychiatry (woman) at St. Elizabeth's Hospital, Washington, D. C., at \$4,600 a year; junior medical officer (intern), \$2,000 a year, and junior medical officer (psychiatric resident), \$2,000 a year. Competitors will not be required to report for examinations at any place but will be rated on their education and experience. Applications must be on file not later than January 7 if from Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington or Wyoming and not later than January 4 from all other states. Application forms and information may be obtained from the board of civil service examiners at any first class postoffice, from the U. S. Civil Service Commission, Washington, D. C., or from the U. S. Civil Service district office in Atlanta, Boston, Chicago, Cincinnati, Denver, New Orleans, New York, Philadelphia, Seattle, St. Louis, St. Paul, San Francisco, Honolulu, Balboa Heights, C. Z., or San Juan, Puerto Rico.

## Conference on Venereal Disease Control

A conference on venereal disease control work will be held at the Department of Commerce Auditorium, Washington, D. C., December 28-30. Dr. Thomas Parran, surgeon general, U. S. Public Health Service, will discuss the general purpose of the conference in his address of welcome Monday morning. Other speakers at the general sessions will include:

- Dr. Raymond A. Vonderlehr, assistant surgeon general, division of venereal diseases, U. S. Public Health Service, Recent Extension of Venereal Disease Control Work Through the Provisions of the Social Security Act.
- Dr. Edward S. Godfrey Jr., state health commissioner of New York. The Venereal Disease Control Program in New York State.
- Dr. Earle G. Brown, Topeka, secretary, Kansas State Board of Health, The Venereal Disease Control Program in Kansas.
- Dr. C. Walter Clarke, director, bureau of social hygiene, New York City Department of Health, A Typical Municipal Venereal Disease Control Program.
- Dr. Percy S. Pelouze, assistant professor of urology, University of Pennsylvania School of Medicine, Philadelphia, The Modern Clinical Management of Gonorrhea.
- Dr. John H. Stokes, professor of dermatology and syphilology at Pennsylvania, Clinical Problems in Syphilis Control Today.
- Dr. Henry H. Hazen, professor of dermatology, Howard University College of Medicine, Washington, D. C., The Serodiagnosis of Syphilis.
- Paul de Kruif, Ph.D., Holland, Mich., Public Cooperation in the Control of Syphilis.
- Dr. Alan M. Chesney, dean, Johns Hopkins University School of Medicine, Baltimore, Present Research Needs in the Control of Syphilis.

## CORRECTION

**Visualization of the Amount of Residual Urine.**—In the article by Dr. Edwin Beer in THE JOURNAL, December 5, page 1886, the reference in the second column to the illustrations should have been to figures 1 to 6. Under figure 4 the legend should read "Excretory cystogram after voiding, showing stone outside the bladder shadow in the ureter meatus." Under figure 5 the legend should read "Excretory cystogram before voiding, showing intrusion of large intravesical prostate." This was introduced to compare with figure 6, in which after voiding there was practically no residual urine, as evidenced in the urogram.

## Foreign Letters

## LONDON

(From Our Regular Correspondent)

Nov. 7, 1936.

## The Health of London

According to the annual report of the county medical officer of health for London, the infant mortality rate last year was the lowest on record, 58 per thousand live births. There has been a noteworthy reduction in the number of deaths from street accidents, which have fallen from 752 in 1934 to 531 in 1935. Details are given of the migration of population. Until 1881 there was a definite inflow into the "county of London" (the large area, including the suburbs controlled by the London County Council) but since that year the flow has been outward. This is due to the desire, which developed when London became so big, of business men to live in the country and come to town daily for their work. The maximum migration "in" was in the decennium 1841-1851, when it was 251,185. The maximum migration "out" was in 1901-1911, when it was 523,091. During 1921-1931 the migration "out" was 324,261, and in the same period there was an increase of 811,261 in the population of the "outer ring" of London. The figures for the administrative county show the net result of immigration and emigration and disclose that even when the net migration "out" was large there was migration "in" at certain ages, especially of girls between 15 and 20 and of young men between 20 and 25. The maternal mortality for 1935 was 2.58 per thousand live births, the lowest on record. The death rate for tuberculosis was 0.68 per thousand, also the lowest on record.

## The Decline of Population

The decline of population, which has been shown by statisticians to be imminent, is beginning to attract public attention. A population investigation committee has been set up, of which Professor Carr-Saunders (statistician) is the chairman and various societies are represented by well known men—the British College of Obstetrics and Gynecology by Mr. Eardley Holland, the Medical Research Council by Dr. L. S. Penrose, the Royal Economic Society by H. D. Henderson, the British Population Society by Sir Charles Close, F.R.S., the Eugenics Society by Lord Horder and Julian Huxley, the Society of Medical Officers of Health by Dr. Stella Churchill. Other members are Prof. James Young (gynecologist) and Prof. Lancelot Hogben and Dr. R. R. Kuczynski. The two last named are statisticians who have made a special study of population. The program of the committee is not to suggest lines of action but to examine the present situation and the circumstances that have led to it. Since a national problem of the greatest importance has been created by the decline of the birth rate, anxiety about the future will soon be general. It is also likely that there will shortly be inquiries as to what can be done to avert a serious fall in numbers. But it is held that, before useful suggestions can be made, much fuller examination of the position is necessary. About many important aspects of the fall in the birth rate little is known. The committee, which has obtained the services as secretary of Mr. D. V. Glass, a well known writer on population, hopes soon to be able to expand its own organization for research and at the same time arrange for the collection of material, to stimulate investigation by other bodies which engage in research, and to facilitate cooperation and consultation between specialists whose work touches various aspects of the subject.

An organization called the League of National Life is opposed to contraception. It largely represents religious opinion. At a recent meeting Dr. F. J. McCann (gynecologist), who pre-

sided, said that the continued fall in the death rate was concealing the impending decline of population. More children survived and the mean expectancy of life had been raised from fifteen to twenty years since the middle of the last century. The expectancy of life was now 59 years. Already the diminution in the number of young people was being felt in industry. It was computed that in twenty-five years children of 16 would be fewer by a third and that adults from 65 to 74 would be more numerous by a third. The increasing number of old people who had ceased to be producers would impose a burden on the young, who would be still more inclined to shirk the responsibilities of parenthood. As to the causes of the decline, the higher standard of living had brought with it a desire for luxury and amusement which had reacted unfavorably on family life. The attitude of women toward motherhood had changed since they began to claim a larger share in public life. The increase of female employment was another factor. The rapidly spreading use of contraception was exerting its influence more and more in all classes of society. He advocated the closure of the recently established birth control clinics. A resolution was passed "that in the interests of national prosperity and security the government be urged to formulate and carry out a national policy to meet the peril of declining population."

#### The Transport and Storage of Foodstuffs

Much research under government auspices has recently been done on the transport and storage of foodstuffs. The report for 1935 of the food investigation board of the Department of Scientific and Industrial Research, which has just been published, states that in regard to the gas storage of fruit and chilled meat and the brine freezing of fish, general solutions have been found. The right proportion of carbon dioxide to be used in the atmosphere has been ascertained. A good deal of progress has been made in connection with the manufacture of bacon. A survey is being made on the cold storage of herrings. The problem of fruit and vegetables is a different one. The object is to control the living processes during handling and storage, so that after a given time the requirements of the consumer may be satisfied. At present we are far from being able to store raw fruits and vegetables from one season to another, while the qualities after such storage as is common in commerce are in general inferior to the material at its best. The apple, the orange and the banana account for three fourths of the consumption of raw fruit. Fundamental research on the two latter cannot be carried out in this country; it must be done where the fruit is grown. Research is being done in various parts of the empire; on the orange in Australia and South Africa, on the banana in Australia and the West Indies. The storage of tomatoes is being investigated but is hampered by the fact that little is known of the physiology of this fruit.

#### The Use of Analgesics by Midwives

As more than half the labors in this country are attended by midwives, it has been felt that they should have some method of relieving pain. Mr. L. C. Rivett worked out a method of chloroform analgesia by means of 20 minim (1.25 cc.) capsules of chloroform to be crushed and administered to the patient during severe pain. But, as stated in a previous letter (THE JOURNAL, March 28, p. 1104) a committee appointed by the British College of Obstetrics and Gynecology to investigate the question whether there is any safe method which can be entrusted to the midwife in the absence of a physician rejected this method. The committee came to the conclusion that nitrous oxide and air might be safely administered by the Minnitt or similar apparatus, provided recent examination by a physician revealed no contraindication. Its use should be restricted to midwives who have been specially trained. The Central Midwives Board, after consultation with the College

of Obstetrics and Gynecology, has drawn up the following rules for such administration: 1. The midwife must have received instruction in obstetric analgesia at an approved institution, which she has satisfied as to her competence. 2. She must have a certificate in writing from a physician who has examined the patient within a month of labor that the latter is in a fit condition for gas and air administration. 3. There must be in the room at the time of administration, in addition to the midwife, one other person who is either a midwife, a state-registered nurse, a senior medical student or a pupil midwife.

For domiciliary administration there is the difficulty of expense. In a letter to the *Times*, Mrs. Baldwin (the wife of the prime minister), who has headed a movement to raise funds to provide analgesia for women who cannot afford to employ a physician, points out that the recent midwives act should greatly assist in the provision of analgesia for all women, rich or poor. Light portable gas and air machines costing from \$42 to \$63 will soon be available. Arrangements for the delivery and collection of gas cylinders for a charge of 84 cents are being made by a well known firm. The average cost of the gas administered in a series of cases was found to be 50 cents. The fact that such analgesia may have drawbacks, which in some cases may outweigh the advantages, is not taken into account.

#### PARIS

(From Our Regular Correspondent)

Nov. 7, 1936.

#### Social Insurance Questions

A correspondent of the *Concours médical* (a journal in which considerable space is devoted to queries and answers to social insurance questions) asks, with regard to the legal requirement of a physician's notice of having treated an insured person within three days after the first visit, whether this is required only at the onset of an illness or whether such notice must be sent after every call, and, in cases seen only at intervals of two to three weeks, whether a notice must be sent after each visit.

The answer was that such notification must be made only once and within three days after the first call. As to chronic cases, seen only every few weeks, the question presents as to whether the insured person has already received indemnity for six months. If such is the case, the insured person must arrange to have his invalidity extended for another six months, after having been apparently "cured" for an interval of two months. This last requirement has been the subject of much litigation, but according to recent decisions the patient can have his indemnity prolonged without being obliged to rest without compensation for two months.

A correspondent of the *Concours médical* (October 11) states that a female worker who was insured was refused indemnity for medical care to her child because the husband was not insured; hence their children could not benefit by the fact that the mother alone was insured. The answer to this query was that there had been no change in the older law as to result of the passage of the modified law in 1935. The term "insured" is employed irrespective of sex; hence it applies to the wife as well as to the husband. The mother is entitled to recompense for the care of her child even though the father is not insured; hence the claim is a just one and the *caisse*, or disbursing office, of the social insurance organization should be compelled to pay for the child's medical care.

Another correspondent in the October 18 issue asks whether a male worker who receives a pension of 3,900 francs per annum (less than \$200) as the result of invalidity incapacitating him to the extent of two thirds of his working capacity has the right to work a certain number of hours per day or week, corresponding to the remaining third of his former ability to work. The insured has a severe form of diabetes resulting in a two-thirds invalidity. He now works five hours a day instead

of eight as formerly, because the diabetes is in a relatively quiescent stage. The answer to this query was that an insured worker who receives an invalidity pension because of being two-thirds incapacitated has the right to work to the extent (one third) which his health permits. However, the recent law (1935) states that the pension can be suspended whenever the insured has other means equal to the salary received before the invalidity pension was granted. Furthermore, the invalidity pension can be stopped if the ability to work exceeds 50 per cent; hence if the insured person in question does not receive as the result of his two-third incapacity pension and his salary in working a sum equal to that received before being granted the invalidity pension, he can continue to work and receive both his pension and his additional salary.

In the September 27 *Concours médical* a correspondent asks the following question: He wishes to employ a husband and wife as butler and cook respectively. They have an income from property owned by them. Their annual wages at the home of the correspondent of the *Concours médical* are about 10,000 francs. The couple do not wish to join the social insurance, and the question arises whether they have the right to refuse and is the employer liable to a fine, if, as is obligatory in France, he does not pay his share (half) of the monthly premium. The answer to the query was as follows: The revised social insurance law, which went into effect August 21, makes it obligatory for every salaried male or female worker of French nationality who earns 21,000 francs (about \$1,500 before the recent devaluation) to be insured. For workers who have a minimum of one dependent child, this amount is raised to 25,000 francs. If a worker has an income that is independent of the remuneration received for his services, the obligation to be insured is not changed by such additional income. Hence the correspondent was advised not to neglect to notify the social insurance authorities of having employed two persons receiving together a salary of 10,000 francs annually. If the employer fails to do so, the employees can claim from him, in case of sickness, a sum equal to that which should have been paid by both parties by the social insurance fund.

#### A Sidelight on Social Insurance

In the September 20 *Concours médical*, a practitioner asks whether an individual insured under the social insurance law is compelled to submit to an examination by a medical inspector of the caisse, or disbursing office, of the state insurance organization, in the absence of the attending physician. In the reply, the paragraph in the law as modified in October 1935 is cited to the effect that every one insured against illness is obliged to submit to examinations by medical inspectors, a refusal to comply with this requirement resulting in the suspension of all indemnities. Hence the attending physician ought not to advise the insured person to refuse to submit to such an examination, and the insured person cannot insist on the presence of the attending physician. Should the insured person wish to have his physician present, the fee of the latter must be paid by the insured person without any prospect of being recompensed by the insurance caisse, or bureau. The only exception to the necessity of submission to an examination by the medical inspector in the absence of the attending physician is when an inspector interferes with the relation of patient and medical attendant, criticizes the treatment or makes a diagnosis in the presence of the patient which does not conform with that of the attending physician. It is evident that the preceding is one of the weak points of state medicine, because it destroys the confidence between the patient and his physician, which is indispensable to success in treatment. An insured person who is obliged to cease work or travel to a neighboring city for an examination by a medical inspector ought to be recompensed for all expenses, but this question still remains to be decided, according to the *Concours médical*.

#### Fees Received for Social Insurance Cases

If an insured worker wishes to be treated at a hospital that has no contract with the caisses, or disbursing offices, of the social insurance organization, he will be indemnified only at the same rate that is allowed for care at home or in a public hospital. If, however, a private hospital has made a contract to care for the insured, the caisses will pay an agreed sum per diem to the hospital. The amount granted under these circumstances is about equal to that allowed for public hospitals. This per diem allowance is about 42 francs (\$2) and does not include fees for operations, for which such a relatively low allowance is made that, in large cities, vigorous protests have been made to the insurance authorities by the surgical societies.

With regard to fees for the attending staff of public hospitals, by the caisses or disbursing bureaus, the maximum allowed for physicians is 4 francs (20 cents) a day and, for surgeons, fees varying from 6 to 24 francs (\$1.25) will be granted, depending on the type of operation as previously agreed on in accordance with a fee table. July 29 the Syndicat, or Union, of French Surgeons passed resolutions protesting against forcing insured workers to enter public hospitals, because they would be obliged, should they wish to enter a noncontract private hospital, to pay the difference between the per diem charge allowed by the caisses for a contract private or public hospital and the charges of a noncontract hospital. The same was true for surgical fees; hence the Surgical Union demanded that this injustice be corrected by permitting an insured worker to enter a noncontract private hospital and to be indemnified in full for the fees paid to these hospitals and that the surgeons be reimbursed according to an agreed on fee table. Thus the free choice of medical attendant as the French law provides would not be violated and the insured would be considered as such and not as paupers.

#### Social Insurance Law Does Not Permit Choice of Hospital

An important decision was rendered in May by the supreme court to the effect that an insured worker under the social insurance law of 1930 can enter only a private or public hospital that has a contract with the caisses, or local disbursement agencies, of the social insurance organization. If the insured worker chooses a hospital or sanatorium that does not have such a contract, he will receive an indemnity equal only to that which would be granted for a stay in the individual's own domicile. This decision follows considerable litigation during the past two years. The courts of appeal of two departments in 1934 and 1935 and the supreme council of the social insurance organization in August 1935 decided that the insured had the right to choose the institution he wished to enter, whether or not it had a contract with the insurance authorities. An appeal was made from this decision and the supreme court has just overruled the judgment of the lower court, so that, in the future, the free choice of a hospital no longer exists. This decision will work a hardship for many institutions that are unwilling to take care of social insurance cases at the comparatively low rates allowed by the caisses or disbursing agencies.

#### Maud Slye Lectures in Paris

Miss Maud Slye of the University of Chicago, whose research work on the rôle of heredity in cancer has given her an international reputation, lectured on the results of her studies on this subject in the amphitheater of the department of pathology in the medical school (Faculté de médecine) of the University of Paris, October 5.

#### Lecture by Dr. Walter M. Simpson

The value of pyretotherapy in the treatment of syphilis and gonorrhea was the subject of a lecture given by Dr. Walter M. Simpson of Dayton, Ohio, at the Alfred Fournier Institute, June 26.

## BERLIN

(From Our Regular Correspondent)

Oct. 19, 1936.

## The Treatment of Early Syphilis

In virtually all countries the number of cases of early syphilis has considerably declined during the past fifteen years. But the decline has almost universally not taken place at the rate which might have been anticipated in view of modern procedures for the detection and eradication of syphilis. This fact may perhaps be attributed to the lack of a uniform guiding principle in the application of antisypilitic methods as well as to certain diagnostic difficulties. Not only do fundamental therapeutic principles undergo a constant development from country to country; within one country their perfection depends on the personal experience and method of presentation of the individual clinician. To establish greater international coordination of procedure it should first of all be proved that certain guiding principles of therapy conduce to unmistakably superior results. The Section on Hygiene of the League of Nations with this in mind undertook to assemble material from all the important clinics of Germany, Denmark, France, Great Britain and the United States. This material was then studied and evaluated by Professor Martenstein of Dresden.

Of 25,632 cases thus collected, 15,333 could be designated cases of early syphilis. There is an individual standardized

Percentage of Cases in Which at Least One Lumbar Puncture Was Done

Country	Cases of Discontinuous Treatment in Which Lumbar Puncture Was Performed, per Cent	Cases of Continuous Treatment in Which Lumbar Puncture Was Performed, per Cent
Germany .....	28.63	4.13
Denmark .....	5.95	.....
United States .....	56.91	68.40
France .....	8.26	11.11
Great Britain .....	10.28	21.43

record card for each case and in addition each hospital director has appended the answers to a general uniform questionnaire with reference to the therapeutic procedures followed. This material, collected from the best organized and best directed institutions of the respective countries, demonstrated on sifting amazing defects in the practical carrying out of diagnosis and treatment. Consequently a number of fresh syphilis cases, some 13 per cent of the collected cases of fresh syphilis in which the diagnostic and serologic control procedures deviated from recognized methods of the present day, had to be placed in a separate category. In 1,968 cases recorded as seronegative, primary syphilis, positive demonstration of the spirochete was lacking for around 19 per cent despite the fact that such a demonstration constitutes the sole possible proof that the disturbance is of a syphilitic character. In 324 primary cases no attempt to elicit a seroreaction had been made, and in 53 per cent of these cases the spirochete was either not demonstrable or else no attempts had been made to establish its presence. Of a further 3,153 cases recorded as seropositive primary syphilis only 53 per cent were examined for the spirochete, and in only 43.5 per cent of all this number was proof of the presence of the causative agent adduced.

There thus remain to be accounted for only 4,833 cases of primary syphilis and 8,365 cases of secondary syphilis. Even among these cases there was frequent evidence that regular serologic control of any sort was lacking.

Generally speaking, a lumbar puncture was seldom performed. The accompanying table shows the percentage of cases in which at least one lumbar puncture was done. It was further found

that the general fundamental therapeutic principles of particular clinics were adhered to in actual practice in only an infinitesimally small number of the cases treated. Martenstein thought it astonishing that, in spite of this fact, the end results still were forthcoming in relatively favorable measure. He adds that in France the number of cures accomplished in cases of all stages is extremely high; nevertheless, the results obtained in that country through use of discontinuous treatment are not correspondingly favorable. Good end results are to be obtained on the one hand by the so-called continuous treatment, namely, that which is maintained over a long period, and, on the other hand, as in Denmark and Great Britain, by discontinuous (intermittent) treatment. A fair comparison of the benefits of the continuous treatment on the one hand with those of the highly successful discontinuous therapy on the other was not possible on the basis of the material in question.

The committee of the League of Nations then drafted recommendations for the treatment of fresh syphilis. The scheme of the discontinuous therapy is essentially a combination of the English and Danish methods, whereas the guiding principles of the continuous treatment closely follow those which have been established by the Cooperative Clinical Group in the United States.

Martenstein considers as an important point in favor of the continuous treatment that under it the patient is not given the erroneous impression that the treatment has ended, although such an impression is frequently conveyed if discontinuous treatment is used. In the latter a shortening of the intervals between separate treatments would do much to overcome this disadvantage, since a certain regularity in the administration of the treatments would then become more apparent.

## Foundation of the German Society of Hygiene

On the occasion of a meeting of the Society of German Scientific Investigators and Physicians, recently held at Dresden, the German Society of Hygiene was founded. The new society, according to the official announcement, will coordinate all the active forces in the field of hygiene for the more perfect functioning of preventive measures; the society also will seek to assure suitable instruction in hygiene in the universities and the indoctrination of the rising generation in the ideals of comradeship, ethics and honor that relate to hygienic-scientific activity. The society envisages itself as performing another important duty: the discovery of appropriate ways and means by which to indoctrinate Germans of all groups with the concepts of sound, prophylactic attention to health. The direction of the society was entrusted by the National Ministry of the Interior to the president of the National Bureau of Health, Prof. Dr. Hans Reiter. The policies of the society will be shaped by representatives of the ministry, by the national führer of physicians, by numerous research societies and by the social organizations affiliated with the National Socialist party.

The presiding officer of the new society, Professor Reiter, emphasized in this connection that it has been necessary to unite the various trends in hygienic endeavor into one German Society of Hygiene within the framework of which more favorable solution of major problems is assured by the establishment of departments in various special fields. Accordingly in the German Society of Hygiene will be merged the German Association for Public Hygiene, the German Social Hygienic Society and the German Microbiologic Association; further, there will also be indirect representation of the hygienic organizations existing in various localities in Germany, which will be regarded as local units of the German Society of Hygiene. The membership of the society is to include hygienists, both practitioners and scientific investigators, and especially instructors in hygiene in the universities, medical directors of state and communal health departments, medical representatives of the party organi-

zations who serve as hygienists, directors of institutions for care of the sick, and in addition sanitary engineers, sanitary architects, sanitary technicians and sanitary chemists so far as the latter are active in public service (in other words, the membership is not limited to physicians). The German Society of Hygiene will consequently work out a scientific and practical program for the formulation and elucidation of all hygienic problems and in its capacity as adviser to government and party in matters of health render a most welcome assistance to the National Health Bureau.

In conclusion, Professor Heinrich Zeiss of Berlin discussed the national function of German hygiene. It is his belief that the crucial problems of hygiene can be solved only through the new German medicine. The function of German hygiene may best be fulfilled through unified governmental direction as exemplified in the standardization of public sanitary affairs already contemplated. Finical hairsplitting must be abandoned and bacteriology in particular must embrace more synthetic and flexible concepts in theory and practice. The whole task demands a definite organization of German hygienists which must never again be dispensed with. This organized program under party and governmental sponsorship will form the basis for a successful attack on the German national hygienic problems of the future.

#### Injectations by Midwives

According to the terms of a decree just issued by the minister of the interior, the administration of pharmaceutic substances by midwives is to be restricted. The midwife must now abstain from independent administration, either external or internal, of such substances. Exceptions are made in those cases which demand that the patient receive certain medications pending the arrival of a physician as expressly stipulated in the manual of midwifery. According to the new regulations a midwife may administer an injection (a) if instructed to do so by a physician who is present, (b) if instructed to do so by a physician who is not present, (c) in emergency cases if instructed to do so by a physician whose arrival has been delayed. A midwife has no general authority to administer injections.

#### SWITZERLAND

(From Our Regular Correspondent)

Oct. 20, 1936.

#### Iodine Prophylaxis and Endemic Goiter

The canton of Bern is well known as one of those regions in which goiter is endemic. Since 1924 iodized common salt with a content of 5 mg. of potassium iodide to 1 Kg. of sodium chloride has been available to the Swiss public. Since Jan. 1, 1936, this salt has been generally distributed in the canton of Bern and salt that has not been iodized is no longer used. A few years ago the consumption of iodized salt was quite small in the canton of Bern; it amounted in 1933 to only 7 per cent of the total salt consumption, whereas in ten other cantons in late years nearly 100 per cent of the salt purchased was iodized and in another five cantons the corresponding figures stood between 50 and 100 per cent. Since many laymen and physicians have asserted that even a minimal admixture of iodine in common salt may be injurious, all alleged harmful effects of the iodine have to be carefully examined. The effectiveness of iodized common salt in the prophylaxis of goiter must, on the other hand, be studied. Dr. Wegelin, the Bern professor of pathologic anatomy, called attention in 1926 to the fact that the histologic picture of the thyroid in a new-born infant assumed a normal appearance if the mother had ingested iodized common salt during pregnancy. Large vesicles containing colloid were seen to appear in such cases. Wegelin was able, subsequently, to verify his observations many times. The weight of the thyroid of the new-born also underwent remarkable reduction: in seventeen of eighteen cases in which the gravid

mother had used iodized common salt, iodine tablets or other preparations containing iodine the weight was from 1 to 6 Gm. In the remaining case it was 14 Gm. Unfavorable results also have been reported from some of the cantons, but others have reported notable successes. For example, in the Ausser-Rhoden section of the canton of Appenzell, more strongly iodized salt with 10 mg. of potassium iodide to 1 Kg. of salt has been in use since 1922. Congenital struma is on the way to complete disappearance in that locality. Animal experiments of Schmelting have demonstrated, moreover, that the thyroids of newly born rats are richer in colloid if the mother has been supplied iodine in small amounts.

As only scanty data on the iodine need of pregnant mothers were available, Wegelin induced his assistant, Dr. Steinmann, to make larger scale tests of the influence of iodine prophylaxis on the thyroid of the new-born. Steinmann collected data from the years 1909 to 1934 on the absolute and relative weight of the thyroid of 178 newly born infants. The material was divided into five groups on the basis of five year periods, save that the first group represented six years in order to include a sufficient number of cases. The two periods following 1924, that is, after the beginning of iodine prophylaxis with iodized common salt and other substances containing iodine, were now compared with the three previous periods and an unmistakable decrease in the absolute and relative weight of the thyroid was noted for the more recent years. For the period 1930-1934 the difference of the mean value exceeded the threefold mean error all along in contrast to the period prior to 1924, so that according to statistical rules the difference possesses a sure factual importance, whereas this cannot be universally established for the years 1925-1929. Furthermore, in the last decade an increase in the number of thyroid bodies of lesser weight (below 3 or, say, 6 Gm.) could be determined, whereas the number of large struma cases remains unchanged, as was to be expected. Among the prematurely born also the relative thyroid weight has sunk plainly since 1924. As there has apparently been no migration of pregnant women from goiter-free regions, it must be assumed that the decrease in weight of the thyroid among the new-born depends principally on the iodine prophylaxis of goiter.

By a second series of examinations, Schnetz has now determined that since 1924 a change in the character of the thyroid of children and of young adults has also appeared. A total of 8,460 cases covering the years 1909-1934 was collected, arranged according to age and, like the other group, divided into five periods of five or six years each. The data evidenced an obvious increase in the weight of the normal thyroid during the years 1930-1934 in persons from 5 to 25 years of age; that is, precisely in those persons whose thyroids were still in a sensitive state (the stage of diffused hyperplasia) at the time of the introduction of iodine prophylaxis. Hence, in this age group, a considerable decrease in cases of struma nodosa has occurred. The difference in the values in the years 1930-1934 here too has considerably exceeded the threefold mean error as opposed to the value in the period prior to 1924. In the upper age group (over 30), as had been expected, the number of nodular goiters remained approximately stationary, since the iodine no longer causes the nodes to disappear and, according to earlier examinations, from the twentieth year forward the incidence of struma nodosa in Bern amounts to between 67 and 90 per cent. Diffused struma tended to decrease among the youthful age groups from 1930 to 1934.

From these statistics it must be concluded that endemic goiter is on the wane in the canton of Bern and that iodine prophylaxis is largely responsible for this subsidence. To be sure, the influence of possible migrations from goiter-free regions has yet to be carefully examined. A more authentic perspective of the effect of iodized common salt will first be possible thirty years hence, after a greater number of the Bernese population

as developed from fetal life to adulthood under the influence of iodine prophylaxis. In that time it will likewise be seen whether the iodine dosage should perhaps be increased and whether any cases appear refractive to iodotherapy; that is, cases in which persons develop goiter in spite of the administration of iodine. The results to date still permit of the conclusion that with iodine prophylaxis the beginnings of a successful fight on goiter have been made.

Of further interest are the clinical data furnished as supplementary to the foregoing report and also discussed in the Bern Medical Society, all the more so as on the question of goiter prophylaxis by iodized common salt there still exists no unity of opinion even in the canton of Bern, wherein the disease may also adequately observed. Professor Burgi, pharmacologist, stated in this connection that it was virtually impossible to form a durable basic compound of common salt and potassium iodide; it should be assumed therefore that occasionally a greater amount of iodine will be ingested. The amount, nevertheless, is still so small that reports of its injuriousness can scarcely be credited.

Prof. H. Guggisberg, gynecologist, verified Professor Wegelin's finding that to achieve maximal effect prophylaxis of goiter must be introduced before birth. Physical studies at the Woman's Clinic have disclosed that a large majority of infants are born with manifestly enlarged goiter. The measurements were taken on the third or fourth day when swellings due to birth had already completely disappeared and nevertheless the thyroid nearly always exhibits an essential hypertrophy, particularly pronounced in the lateral lobes. Not only is congenital struma a bodily defect for the new-born: it may bring its train extensive cardiac alterations in the form of enlargement, besides disturbances of the longitudinal growth and of ossification. Therefore the inauguration of iodine treatment for pregnant women encountered difficulties in many communities, as a number of investigators are of the opinion that there is a hyperthyreosis coextensive with pregnancy. The latter advise against the administration of iodine in pregnancy. Conversely, extensive investigations at the Guggisberg clinic have demonstrated that no certain signs of hyperthyreosis are evidenced.

Professor Glanzmann, pediatrician, stated that struma neonati is extraordinarily sensitive to iodine. A single dosage of 1 mg. of potassium iodide suffices to bring the gland to normal size. Now and then goiter is present in nurslings who have received an unvaried milk diet. The iodine tolerance of goitrous nurslings and children is in general excellent. In the common salt iodine prophylaxis and that administered in schools, Glanzmann hardly observed any hypersensitivity. On the other hand, some cases of large parenchymatous struma were observed among children, and this type of disease almost always showed itself refractive to iodotherapy.

Yet when all is considered on the basis of the collected data, the constant recession of goiter since 1924 speaks plainly for the effectiveness of iodine prophylaxis.

In this connection, several recent studies of endemic cretinism should be mentioned. This disease and endemic goiter are usually encountered in the same geographic regions. The investigations of this difficult problem, as it exists in Switzerland, by the Medical Faculty of Bern, have been most fruitful. The Bernese surgeon Theodor Kocher, a pioneer in his time, determined the similarity of manifestations in cretinism and in subjects who had undergone total extirpation of the thyroid. The theory that cretinism may be explained as a pure hypothyreosis (hypofunction of the thyroid) fails to receive full support either from observations among human beings or by experimentation with animals. A complete solution of this problem is not as yet possible. A forthcoming book entitled "Endemic Cretinism" by Professor de Quervain, now a surgeon at Bern, and Professor Wegelin contains the following statement based on exten-

sive investigation of the field: "We know with certainty that endemic cretinism is attributable to a dysfunction of the thyroid produced by goiter noxa and that this dysfunction, already present in fetal life, continues in extra-uterine life to damage the thyroid body at a varying rate and in varying degree. Directly parallel, harmful effects on the entire organism by the noxa of goiter and simultaneous involvement of the other endocrines are possible but have not yet been demonstrated by anatomic, clinical or experimental evidence. For the peripheral disturbance of the organs of hearing there is still lacking up to the present an authoritative explanation of any kind whatever. The same is true of the increased incidence of cardiac disturbances, hernia, adenoid vegetations and an even apparent incidence of actual deformity within the endemic zones. It must be added that in future a complete solution of the problem will be reached only if, instead of singling out the goiter-free cretin dwarfs as was formerly done, all aspects of endemic thyreopathy are considered within the scope of investigations."

In the chapter on the prophylaxis and treatment of cretinism, Professor de Quervain guardedly refrains from use of the term "race hygiene" sometimes employed in this connection. Cretinism bears no relation to any race. Cretin offspring may appear among all races of men wherever the parental environment predisposes to the so-called noxa of goiter. Faulty, unhygienic living conditions are an important factor in the goiter zones. The most important factors in prophylaxis are housing in the widest sense of the term and the consideration of ventilation, light, good drinking water and good food. According to experimental demonstration, small doses of iodine act as a check on the noxa of goiter.

Cretinism cannot be considered a heritable disease in the true sense, as the majority of cretins are not the offspring of cretin parents but of normal parents, although to be sure the mother is frequently goitrous. Any sterilization legislation is in this connection out of place. As de Quervain emphasizes: "To sterilize all goitrous women because they may give birth to cretins would be to exterminate one section of the population for the benefit of another section which would in turn be subject to the same fate." Persons who present cretinism in its milder forms may become altogether useful citizens. Cretins possess such pleasant characteristics as "unfailing optimism," wittiness, liveliness, at repartee, gratitude and a sense of humility. "Regions in which cretinism forms the undertone are therefore unsuitable for revolutionary experiments."

The theoretical concept of cretinism as a hypothyreosis has suggested that substitution therapy be attempted. However, the end results alike from implantation of a thyroid tissue that is capable of function as from the medicinal administration of thyroid preparations were, according to Professor de Quervain, "altogether modest."

## RIO DE JANEIRO

(From Our Regular Correspondent)

Oct. 15, 1936.

### Neurosurgery of Kidney

Dr. Silva de Assis, of Bello Horizonte, recently published an article on neurosurgery of the kidney, in which he reaches the following conclusions: The innervation of the kidney originates only in the autonomic nervous system. The reflex phenomena of sensory and secretory nature that take place in pathologic conditions of the urinary tract originate in interconnections of the ganglions of the renal plexus and in anastomoses of renal nerves. Fibers of smooth muscle are abundant in the structure of the calices, renal pelvis and ureter, as proved by histologic and physiologic studies of the structures. Peristalsis in the structures results from tonicity and contractility of smooth muscle fibers. The normal passage of urine from the kidney to the bladder is not passive. Peristaltic waves originate at the renal pelvis and propagate through the ureter, the seg-

ments of which are stimulated to progressive dilatation and contraction by the passage of urine. In these conditions there are simultaneously ureteral segments filled with urine and empty segments of the ureter. Renal nerves are not indispensable for the functions of the organ. The anatomic section of the renal nerves results in development of renal hypertrophy. The total functional capacity of enervated kidneys is increased in comparison with that of normal kidneys. Section of the renal nerves does not prevent peristalsis for the conduction of urine, which is maintained by the fibers of smooth muscle in the structures. Spasm of the smooth muscles of the urinary tract in pathologic conditions may result in obstructing the tract at the level of the calices, renal pelvis or ureter, with consequent retention of urine in the segment immediately over the obstructed one. Retention of urine is a frequent urologic disease in which stasis at the renal pelvis is the most frequent symptom. Satisfactory results in treating the condition depend on making an early diagnosis. The presence of a neuromuscular disequilibrium of renal sympathetic origin is the most important pathogenic factor of urinary retention and the cause of spasms, pain and muscular hypertonia. Total enervation of the kidney is indicated in retention of urine. It results in the control of pain and in reestablishing urination without causing disturbances to normal renal functions. The technic of the operation is described.

#### Tonic Pupil (Adie's Syndrome)

Prof. E. Vampré, in a recent lecture before the Associação Paulista, made a study of tonic pupil. The nature and seat of the disease are unknown. The condition was described in the literature in 1931. Subirana of Barcelona wrote a monograph on the subject in 1935. The most important point of Adie's syndrome is the one concerning the differential diagnosis from myotonic pupil and also from Argyll Robertson's sign. In the latter sign, frequently both pupils are involved in the miotic condition and the pupils are slightly dilated under the effect of cocaine and atropine. Pupillary myotony ordinarily is unilateral and the diameter of the pupil is rarely less than 3 mm. The pupil is normally dilated under the effect of cocaine and atropine. It contracts to convergence only after a few seconds and the contraction may increase even after suspension of convergence and accommodation. The pupil returns slowly to its original diameter.

### Marriages

DONALD STRATTON SEARLE, Worcester, Mass., to Miss Ruth Westcott Sheppard of Germantown, Pa., October 24.

GEORGE R. BARRETT, Pioneer Mine, B. C., Canada, to Miss Marjorie Elaine Gibbons of Nanaimo, in August.

MERCHISLAW M. SARNECKI, St. Paul, to Miss Margaret Fahnestock of Lincoln, Neb., September 6.

JEROLD A. CAMPBELL, Lockport, N. Y., to Miss Mary Dolores Griffin of Hornell, October 3.

HORACE ASA DAY, Orlando, Fla., to Miss Mary Elizabeth Schlater of Toledo, Ohio, October 10.

WILLIAM THOMAS CLARY to Mrs. Polly Gordon Bledsoe, both of Greensboro, N. C., in October.

WILLIAM E. LOCKHART JR., Canyon, Texas, to Lora Bell Kunze of Minneapolis, August 24.

JAMES FLEXNER, New York, to Miss Dorothy Mae Ensheimer of Harrison, N. Y., November 26.

DEWEY THURMAN NABORS to Miss Ida Susannah Thomas, both of Atlanta, Ga., October 10.

FRANK VANN CHAPPELL, Marianna, Fla., to Miss Mary Lee Lindsey of Perry, September 12.

JAMES M. CAMPBELL to Miss Lucile Box, both of Newton, Miss., September 12.

PAUL J. BLESSINGER to Miss Jo Gerber, both of Jasper, Ind., October 27.

### Deaths

**William Lafayette Rich** ☉ Salt Lake City; Washington University School of Medicine, St. Louis, 1907; member of the House of Delegates of the American Medical Association in 1923; past president and secretary of the Utah State Medical Association; fellow of the American College of Physicians; member of the medical advisory board during the World War; on the staffs of the Latter-Day Saints Hospital, Salt Lake General Hospital, Children's Hospital and St. Mark's Hospital; aged 58; died, November 17, of chronic myocarditis.

**William Hobbs Pritchard** ☉ Columbus, Ohio; Miami Medical College, Cincinnati, 1900; member of the American Psychiatric Association; for many years instructor in medicine in the mental department, Ohio State University College of Medicine; served during the World War; physician to the Ohio Hospital for Epileptics, Gallipolis, 1903-1905, and superintendent, 1905-1911; physician to the Columbus State Hospital, 1901-1903, and since 1916 superintendent; aged 69; died, November 11, of myocarditis.

**Joseph Hume** ☉ New Orleans; Medical College of the State of South Carolina, Charleston, 1901; professor of urology, emeritus, Tulane University of Louisiana School of Medicine; member of the American Association of Genito-Urinary Surgeons and the Clinical Society of Genito-Urinary Surgeons; fellow of the American College of Surgeons; on the staffs of the Touro Infirmary and the Flint Goodridge Hospital; aged 60; died, October 17, of glomerular nephritis.

**Stanley Perkins Warren**, Portland, Maine; Yale University School of Medicine, New Haven, Conn., 1874; member and past president of the Maine Medical Association; member of the New England Obstetrical and Gynecological Society; had served as obstetrician on the staffs of the Maine General Hospital, Maine Eye and Ear Infirmary and Webber Hospital; author of "Principles of Obstetrics"; aged 90; died, October 5, of hypertensive heart disease.

**Charles Duncan** ☉ Concord, N. H.; Harvard University Medical School, Boston, 1903; secretary of the New Hampshire Board of Registration in Medicine and State Board of Health; for many years member of the city board of education; on the staffs of the State Hospital, the Margaret Pillsbury Hospital and the New Hampshire Memorial Hospital; aged 64; died, November 12, of carcinoma of the stomach.

**George Chenery Anthony** ☉ Wellesley, Mass.; Boston University School of Medicine, 1904; member of the New England Roentgen Ray Society; served during the World War; member of the staffs of the Newton (Mass.) Hospital, Waltham (Mass.) Hospital, Leonard Morse Hospital, Natick, and the Union Hospital, Framingham; aged 57; died, October 22, of hypertensive heart disease and pneumonia.

**Robert Grant Thayer** ☉ Indianapolis; Indiana University School of Medicine, Indianapolis, 1930; on the staffs of the Methodist Hospital, City Hospital and Indiana University Hospitals; formerly on the staffs of the Central State Hospital, Indianapolis, and the State Hospital, Richmond; aged 34; died suddenly, October 30, in Richmond, of acute cardiac dilatation.

**Lester Howard McAllister**, Port Jervis, N. Y.; University and Bellevue Hospital Medical College, New York, 1908; member of the Medical Society of the State of New York; served during the World War; formerly member of the board of education; on the staff of St. Francis Hospital; aged 51; died, October 17, of myocarditis and coronary occlusion.

**Fred Albro Pringle** ☉ Montclair, N. J.; Maryland Medical College, Baltimore, 1912; member of the staff and formerly medical superintendent of the Essex County Hospital for Contagious Diseases, Belleville; member of the staff and secretary of the medical board of the Mountinside Hospital; aged 48; died, October 11, of coronary thrombosis.

**Randolph Lucien McCalla**, Boise, Idaho; Columbia University College of Physicians and Surgeons, New York, 1920; at one time assistant in medicine, instructor in medicine and assistant clinical professor of medicine at the University of California Medical School, San Francisco; aged 40; died, October 10, of uremia and cerebral edema.

**Frederic Codman Cobb**, Gloucester, Mass.; Harvard University Medical School, Boston, 1887; member of the Massachusetts Medical Society and the American Laryngological, Rhinological and Otological Society; aged 76; died, October 11, in the Baker Memorial Hospital, Boston, of gastric ulcer with massive hemorrhage and coronary sclerosis.

**Thomas George Sloan** ☉ Manchester, Conn.; Columbia University College of Physicians and Surgeons, New York, 1899; formerly instructor in anesthetics at Yale University School of Medicine, New Haven; for many years on the staff of the Manchester Memorial Hospital; aged 61; died suddenly, October 30, of coronary occlusion.

**Clinton M. Hiestand**, Springfield, Ohio; Medical College of Ohio, Cincinnati, 1894; member of the Ohio State Medical Association; past president of the Clark County Medical Society; served during the World War; at one time city physician; formerly on the staff of the City Hospital; aged 69; died, October 12, of uremia.

**Fremont W. Scott**, Medina, N. Y.; Hahnemann Medical College of Philadelphia, 1880; past president and secretary of the Orleans County Medical Society; formerly physician to the board of health of Medina and coroner; aged 80; on the staff of the Medina Memorial Hospital, where he died, October 19, of coronary occlusion.

**Alexander Hofheimer** ☉ New York; Columbia University College of Physicians and Surgeons, New York, 1909; professor of internal medicine at the New York Polyclinic Medical School and Hospital; on the staffs of the Polyclinic and Gouverneur hospitals; aged 50; died, October 27, of coronary thrombosis.

**Benjamin H. Beydler**, Bridgewater, Va.; Baltimore University School of Medicine, 1897; member of the Medical Society of Virginia; on the staff of the Rockingham Memorial Hospital, Harrisonburg; aged 64; died, October 27, as the result of injuries received in an automobile accident last June.

**Robert Borneman Ludy**, Atlantic City, N. J.; Medico-Chirurgical College of Philadelphia, 1898; Hahnemann Medical College and Hospital of Philadelphia, 1900; formerly associate in medicine, Temple University School of Medicine, Philadelphia; aged 66; died, October 2, of cerebral hemorrhage.

**August Severin Eggers**, Grand Forks, N. D.; Kongelige Frederiks Universitet Medisinske Fakultet, Oslo, Norway, 1889; member and past president of the North Dakota State Medical Association; fellow of the American College of Surgeons; aged 73; died, October 7, of pernicious anemia.

**Edward B. Gossett** ☉ Kansas City, Mo.; University Medical College of Kansas City, 1894; for many years surgeon in charge of the Atchison, Topeka and Santa Fe Railway Hospital, Ottawa, Kan.; aged 71; died, October 16, in St. Joseph Hospital, of pulmonary embolism and bacillary dysentery.

**Alvah A. Swayze**, Hackensack, N. J.; College of Physicians and Surgeons, Baltimore, 1897; member of the Medical Society of New Jersey; past president of the Bergen County Medical Society; for many years on the staff of the Hackensack Hospital; aged 67; died, October 17, of paralysis agitans.

**John Fleming Chamberlain**, Natchez, Miss.; Tulane University of Louisiana Medical Department, New Orleans, 1906; member of the Mississippi State Medical Association; one of the owners of the Chamberlain-Rice Hospital; aged 59; died suddenly, October 26, of coronary thrombosis.

**Eugene Joseph Callahan** ☉ Staten Island, N. Y.; University of the City of New York Medical Department, 1894; past president of the Richmond County Medical Society; a founder and on the staff of St. Vincent's Hospital; aged 65; died suddenly in October.

**Matthew Barr Grieve**, Spokane, Wash.; University of Oregon Medical School, Portland, 1897; member of the Washington State Medical Association; at one time county coroner and city health officer; aged 71; died, October 6, of diabetes mellitus and uremia.

**George Webster**, Southbridge, Mass.; Baltimore Medical College, 1900; member of the Massachusetts Medical Society; formerly member of the board of health of Southbridge and school physician; on the staff of the Harrington Memorial Hospital; aged 61; died, October 27.

**Charles Blim**, Crete, Ill.; Rush Medical College, Chicago, 1888; member of the Illinois State Medical Society; formerly secretary of the southern Cook County branch of the Chicago Medical Society; for many years a member of the school board; aged 77; died, October 9.

**Ralph Sherrick Chamberlain**, Denver; Western Pennsylvania Medical College, Pittsburgh, 1903; at one time chief demonstrator of anatomy, Denver College of Physicians and Surgeons; aged 57; died, October 13, in the Presbyterian Hospital of heart disease.

**Frank Hamilton Hunt** ☉ Boston; University of Virginia Department of Medicine, Charlottesville, 1899; associate in

medicine at Harvard University Medical School; on the staff of the Sanatorium Division of the Boston City Hospital; aged 60; died, October 26.

**William Patrick John Burke**, Hamden, Conn.; Yale University School of Medicine, New Haven, 1890; served during the World War; aged 68; died, October 17, in the Veterans Administration Facility, Newington, of heart disease and pulmonary tuberculosis.

**David Miller Shoemaker** ☉ Waynesboro, Pa.; Pulte Medical College, Cincinnati, 1905; served during the World War; past president of the Franklin County Medical Society; aged 63; on the staff of the Waynesboro Hospital, where he died, October 9, of carcinoma.

**John Miller Beggs**, Chattahoochee, Fla.; Atlanta (Ga.) Medical College, 1914; member of the Florida Medical Association; aged 47; for many years on the staff of the Florida State Hospital, where he died, October 28, of carcinoma of the esophagus.

**Frederick William Hander**, Beaumont, Texas; University of Nashville (Tenn.) Medical Department, 1900; also a drug-gist; veteran of the Spanish-American War; aged 63; died, October 14, in the Veterans Administration Facility, Los Angeles.

**Edgar Clide Webb** ☉ Canon City, Colo.; Indiana University School of Medicine, Indianapolis, 1913; past president of the Fremont County Medical Society; on the staff of the Colorado Hospital; aged 53; died, October 30, of pneumonia.

**Francis Kennedy Armstrong**, Fort Myers, Fla.; M.B., University of Toronto Faculty of Medicine, 1892; and M.D., Victoria University Medical Department, Coburg, Ont., 1892; aged 68; died, October 26, in the Lee Memorial Hospital.

**Richard J. Ellis**, New York; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1910; aged 57; died, September 28, of self-inflicted incised wounds and of injuries received when he jumped from an eight story window.

**William Bradford Blanchard** ☉ Framingham, Mass.; University of Maryland School of Medicine, Baltimore, 1914; aged 56; died, October 13, in Palmer Memorial Hospital, Boston, of cerebral thrombosis and diabetes mellitus.

**Lloyd R. Atkins**, New York; Hahnemann Medical College and Hospital, Chicago, 1887; served during the World War; on the staff of the New York Medical College and Flower Hospital; aged 69; died, October 7, of heart disease.

**Louis David Hughes** ☉ Minneapolis; St. Louis University School of Medicine, 1909; served during the World War; member of the staff of the Deaconess Hospital; aged 48; died suddenly, October 23, of coronary thrombosis.

**William Egbert**, Calgary, Alta., Canada; M.B., University of Toronto Faculty of Medicine, 1889; M.D., Victoria University Medical Department, Coburg, Ont., 1889; formerly lieutenant governor; aged 79; died, October 15.

**Simon M. Chess**, Brooklyn; Long Island College Hospital, Brooklyn, 1912; member of the Medical Society of the State of New York; formerly assistant in medicine at his alma mater; aged 58; died, October 14, of heart disease.

**Wallace Archibald Watson**, Ponce Coupe, B. C., Canada; Northwestern University Medical School, Chicago, 1908; formerly on the staff of the Ponce Coupe Hospital; aged 52; died suddenly, October 14, at Dawson Creek.

**John William Lucas**, Brookville, Ind.; Indiana Medical College, School of Medicine of Purdue University, Indianapolis, 1907; member of the Indiana State Medical Association; aged 55; died, October 1, of angina pectoris.

**Harvey S. Kelsey**, Willis, Mich.; Saginaw (Mich.) Valley Medical College, 1901; American Medical Missionary College, Chicago, 1905; aged 65; died, September 4, in the University Hospital, Ann Arbor, of meningitis.

**Ellis Schwied**, Chicago; Chicago College of Medicine and Surgery, 1914; on the staffs of the Mount Sinai Hospital and the Frances E. Willard Hospital; aged 46; died, November 27, of coronary thrombosis.

**Lenzy E. McClure**, Walnut Grove, Mo.; St. Louis College of Physicians and Surgeons, 1903; member of the school board; aged 64; died, October 11, in a hospital at Springfield, of cerebral hemorrhage.

**Bert H. Honeywell** ☉ Ann Arbor, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1909; also a dentist; aged 59; died suddenly, October 4, of coronary thrombosis.

**William F. Beverly**, Nicholasville, Ky.; Medical College of Ohio, Cincinnati, 1888; aged 77; died, October 2, in the Good Samaritan Hospital, Lexington, of acute colitis and pulmonary emphysema.

**Charles Alexander Houston** ♂ Park Rapids, Minn.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1901; aged 60; died, October 30, of coronary occlusion and arteriosclerosis.

**Frank Lee Cato**, Leslie, Ga.; Jefferson Medical College of Philadelphia, 1887; member of the Medical Association of Georgia; aged 73; died, October 23, of chronic nephritis and diabetes mellitus.

**Lee Wilbert Roller**, Richmond, Ind.; Kansas Medical College, Medical Department of Washburn College, Topeka, 1905; served during the World War; aged 62; died, October 15, of diabetes mellitus.

**Frank Conquellon Titzell**, Iowa City, Iowa; Chicago Homeopathic Medical College, 1889; member of the Iowa State Medical Society; aged 73; died, October 18, of carcinoma of the stomach.

**Stanley James Keyes**, New York; Long Island College Hospital, Brooklyn, 1908; member of the Medical Society of the State of New York; aged 53; died, October 4, of coronary thrombosis.

**Theodore Miller Leonard**, Buffalo; University of Buffalo School of Medicine, 1901; formerly assistant professor of medicine at his alma mater; aged 59; died, November 19, of bronchopneumonia.

**John Crockett Newton**, San Francisco; University of California Medical Department, San Francisco, 1902; aged 61; died, September 15, of arteriosclerosis, hypertension and bronchopneumonia.

**Joel Hasty Massie**, Dallas, Texas; College of Medicine and Surgery, Chicago, 1909; aged 48; died, September 18, in the Good Samaritan Hospital, Los Angeles, of auricular fibrillation.

**Robert W. Hawkins**, Brazil, Ind.; Medical College of Indiana, Indianapolis, 1895; served during the Spanish-American and World wars; aged 64; died, October 25, of cirrhosis of the liver.

**Nicholas Argyr**, Del Norte, Colo.; University of Colorado School of Medicine, Denver, 1934; member of the Colorado State Medical Society; aged 33; died, October 3, of pneumonia.

**Andrew Olans Flom**, Chisago City, Minn.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1912; aged 50; died suddenly, October 28, of cerebral hemorrhage.

**Harold Peter Prewett**, Antioch, Calif.; University of California Medical School, San Francisco, 1930; aged 32; was killed, September 5, near Reading, in an automobile accident.

**Alice Hall Chapman**, San Francisco; Woman's Medical College of Pennsylvania, Philadelphia, 1886; aged 78; died, September 10, in the Stanford Hospital, of myocarditis.

**Charles Ballard Hall**, Copenhagen, N. Y.; New York Homeopathic Medical College and Hospital, 1894; aged 68; died, October 18, of renal calculi and diabetes mellitus.

**Henry B. Thompson**, Hillsboro, Ohio; Medical College of Ohio, Cincinnati, 1882; aged 84; died, September 16, in the Hillsboro Hospital, of a hip fracture received in a fall.

**Rowland Peter Wild**, Traer, Iowa; State University of Iowa College of Homeopathic Medicine, Iowa City, 1903; aged 56; was killed, October 24, in an automobile accident.

**Edwin Norman Chaney**, Pasadena, Calif.; Hahnemann Medical College and Hospital, Chicago, 1891; aged 71; died, October 11, of nonalcoholic cirrhosis of the liver.

**Henry Mark Koles** ♂ New York; Bellevue Hospital Medical College, New York, 1892; aged 75; died, October 15, in the Mount Sinai Hospital, of acute appendicitis.

**James Augustus Trotman**, Philadelphia; Temple University School of Medicine, Philadelphia, 1908; aged 60; died suddenly, October 29, of chronic endocarditis.

**John G. Maeder**, New York; New York Homeopathic Medical College, 1885; aged 81; died, October 12, in Upper Nyack, N. Y., of hypertensive heart disease.

**William Patrick Cross** ♂ Boston; Harvard University Medical School, Boston, 1896; aged 63; died, October 21, of coronary thrombosis and chronic myocarditis.

**Robert Hislop**, Detroit; Faculty of Medicine of Trinity College, Toronto, Ont., Canada, 1883; aged 80; died, October 4, in the Henry Ford Hospital of pneumonia.

**Porter W. Stevenson**, Gettysburg, Pa.; College of Physicians and Surgeons of Chicago, 1884; aged 89; died, September 3, of heart disease and arteriosclerosis.

**Solomon Baumgarten** ♂ Milwaukee; Medizinische Fakultät der Universität Wien, Austria, 1922; aged 39; died, October 11, in St. Joseph's Hospital of endocarditis.

**Royal August Henry**, Salinas, P. R.; Hahnemann Medical College and Hospital of Philadelphia, 1909; aged 49; died recently of staphylococcal septicemia.

**Ernest Frank Ruppe** ♂ New York; Bellevue Hospital Medical College, New York, 1883; aged 71; died, October 26, of chronic nephritis and myocarditis.

**William B. Radford**, Hopkinsville, Ky.; University of Louisville Medical Department, 1883; aged 75; died, September 17, of organic heart disease.

**Vance Gist**, Frederick, Okla.; Vanderbilt University School of Medicine, Nashville, Tenn., 1880; aged 82; died, September 22, of cerebral hemorrhage.

**William Joshua Webb**, Los Angeles; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1878; aged 86; died, September 13.

**Theodore W. A. Blank**, St. Louis; Beaumont Hospital Medical College, St. Louis, 1890; aged 73; died suddenly, October 6, of heart disease.

**George Hathaway Gleason**, Milton, Mass.; Harvard University Medical School, Boston, 1902; aged 58; died, October 7, of cirrhosis of the liver.

**Forenci Elixis Hill**, Bainbridge, N. Y.; Eclectic Medical College of the City of New York, 1893; aged 72; died, October 21, of heart disease.

**Peyton L. Campbell**, Dallas, Texas; University of Louisville (Ky.) Medical Department, 1894; aged 70; died, October 1, of chronic nephritis.

**Charles H. Day**, Dayton, Wash.; Hahnemann Medical College and Hospital, Chicago, 1886; aged 80; died, October 5, of chronic myocarditis.

**Alonzo J. Marlar**, Billingsley, Ala.; Memphis (Tenn.) Hospital Medical College, 1892; aged 85; died, October 10, of mitral insufficiency.

**Houston Mifflin**, Norwood, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1879; aged 85; died, September 22.

**Emmet William Barry** ♂ Whitinsville, Mass.; College of Physicians and Surgeons, Baltimore, 1897; aged 65; died, October 6, of pneumonia.

**Philip B. Amunson**, Mondovi, Wis.; Rush Medical College, Chicago, 1895; aged 63; died, October 13, of cardiovascular renal disease.

**Samuel Logan McCullough**, Oakdale, Pa.; University of the City of New York Medical Department, 1884; aged 83; died, September 4.

**David Lawrence Redmond**, Buffalo; Niagara University Medical Department, Buffalo, 1887; aged 73; died, October 13, of arteriosclerosis.

**George Manuel Dooneief**, Brooklyn; Long Island College Hospital, Brooklyn, 1921; aged 40; died in October, of multiple myeloma.

**William Leonard Vickers**, Rialto, Calif.; Emory University School of Medicine, Atlanta, Ga., 1920; aged 42; died, September 6.

**Starke Hassell**, Miami, Fla.; Jefferson Medical College of Philadelphia, 1886; aged 75; died, October 6, of carcinoma of the prostate.

**Alfred James Parker**, Chicago; Chicago College of Medicine and Surgery, 1913; aged 62; died, October 6, of diabetes mellitus.

**Martin Luther Boyd**, Middle Township, N. J.; Detroit College of Medicine, 1908; aged 55; died, October 3, of tuberculosis.

**Frank Kennedy** ♂ Goodland, Ind.; Medical College of Indiana, Indianapolis, 1902; aged 57; died, October 4, of heart disease.

**Gottlieb Schick**, Oceanside, Calif.; College of Physicians and Surgeons of Chicago, 1887; aged 80; died, September 20.

**Joseph B. Cassell**, Harriman, Tenn.; Hospital College of Medicine, Louisville, Ky., 1897; aged 63; died in September.

**Charles Lot Browning**, Chico, Calif.; Cooper Medical College, San Francisco, 1894; aged 75; died, September 19.

## Correspondence

### BLOOD TYPING METHOD FOR DETERMINING PARENTAGE

*To the Editor:*—In Queries and Minor Notes in THE JOURNAL, October 31, the question is raised as to the efficiency of the blood typing method of determining parentage, together with the dependability and reliability of this method. The Pittsburgh physician also wishes to know about "the weaknesses of the method and the situations in which it is scientifically dependable and reliable."

While the answer cites that the blood tests prove only non-paternity and the admissibility of evidence of blood grouping in the recent decision of the South Dakota Supreme Court, in my opinion more can be said in support of the "dependability and reliability of these blood tests."

It may, for instance, be mentioned that European courts have been using these tests for more than ten years, and Schiff collected 6,665 cases with 546 instances in which a false accusation was made. These figures, which do not include the more recent tests for M and N, must be considerably larger by this time. The courts of Germany, Austria, Denmark, Sweden, Norway, Switzerland and Lithuania recognize these tests; very likely this list of countries is incomplete.

In the United States, only New York and Wisconsin have laws on the statute books since 1935 authorizing their courts to order blood tests in suitable cases. The Wisconsin law, which I sponsored, states that "the results of the test shall be receivable in evidence but only in cases where definite exclusion is established." This makes it clear to the court and jury that the blood tests can prove nonpaternity only; if there is no exclusion, the tests are not accepted as evidence.

I recently framed a bill identical to the Wisconsin law, which is to be submitted to the New Jersey legislature, and Professor Matson writes me that he is preparing such a bill in Montana. There is no doubt that in the near future such laws will be found on the statute books of most or all states.

It is definitely known that the blood properties A and B as well as M and N are constant and readily demonstrable with the aid of suitable reagents. Numerous investigations throughout the world have established not only their hereditary nature but also the exact mechanism of the heredity. The theories for the heredity of the four blood groups and the M and N factors are supported by two independent sets of observations: (1) studies on thousands of families and (2) calculation of gene frequencies determined from the incidence of the serologic types among several races. In other words, the best known geneticists and mathematicians accept these theories as established. Furthermore, to my knowledge, I know of no published reports denying the validity of the observations reported.

At the same time I wish to take this occasion to call attention to the necessity of careful selection, preferably by the local medical societies, of suitably trained experts to perform these tests in those states authorized to accept the results as evidence. While the tests for the four blood groups do not present any technical difficulties, those for M and N require involved serologic procedures for the preparation of specific diagnostic reagents. In the first place, immune serums for M and N must be prepared by several injections of selected blood cells into rabbits. Preliminary tests are required to determine when the antibody for M or N is of sufficient potency. An individual qualified to do this work should have on hand a list of the three sorts of individuals (MN, M and N) in each of at least groups O, B and subgroups A<sup>1</sup> and A<sup>2</sup>. These bloods are required

for the absorptions in the preparation of diagnostic fluids the specificity of which should always be checked on the several varieties of known bloods. It is essential that no specific fluid be employed unless it exhibits potent reactions on sensitive cells; i. e., the difference between bloods possessing and those not possessing a given factor must be very distinct.

Taking these considerations into account, the reliability and value of these blood tests are so well established that American courts are now willing to accept these results as evidence.

PHILIP LEVINE, M.D., Newark, N. J.

### TEACHING PSYCHIATRY TO HOUSE OFFICERS

*To the Editor:*—Today it is generally acknowledged that, in the treatment of many patients, more is accomplished from the recognition and proper management of their mental conflicts than from the diagnosis and treatment of their somatic disturbances; not infrequently in our patients no organic disease is primarily responsible for their complaints. To put it another way, mind plays a large part in the mechanism of illness. All of this calls for a better knowledge of psychiatry on the part of practitioners than most of them have.

How to correct this situation is an important pedagogic problem of today. Better teaching of psychiatry now is being given in our medical schools, but this is not enough.

With a realization that patients at the Peter Bent Brigham Hospital would be better treated if those primarily responsible for their care knew more of the fundamental principles of psychiatry, I sought a means to that end. It was obvious to me that these house officers should have an opportunity to see and follow the management of mental patients in an institution planned for that purpose. How could this be brought about at no cost to the Peter Bent Brigham Hospital?

I took this problem first to Dr. James V. May, commissioner of mental disease of the Commonwealth of Massachusetts, and later to Dr. Winfred Overholser, his successor. Both were willing, actually eager, to cooperate, with the result that they offered to my medical house officers at the Peter Bent Brigham Hospital the opportunity of residence and practical instruction for four months in Massachusetts state hospitals. I incorporated in my medical service of sixteen months an additional period of four months to be spent at one of these state hospitals, the period following a four months experience in clinical laboratory work and preceding clinical service at the Peter Bent Brigham Hospital.

Now this plan has been in operation for a year, two men going to the Boston State Hospital and one to the Worcester State Hospital for each period. What is the result? A noticeable increase in interest in the mental conflicts of our patients and a greatly bettered method of handling their psychiatric problems. It has proved definitely worth while to Brigham patients, and I am sure it will be a continuous help to these house officers in their subsequent practice of medicine. The officers of these institutions have been enthusiastically concerned to see that these house officers learn as much as possible of psychiatry in the available time.

This plan is a practical means of meeting another deficiency in our scheme of educating men to practice a better medicine. Undoubtedly in the long run this plan too will bring a recompense to state hospitals for mental disease in developing practitioners ready to be more cooperative in meeting the enormous problem of the best possible care of patients afflicted with serious mental disease.

HENRY A. CHRISTIAN, M.D., Boston.

Physician-in-Chief, Peter Bent Brigham Hospital.

### "CARE OF THE NEW-BORN INFANT OF THE DIABETIC MOTHER"

To the Editor:—In THE JOURNAL, Sept. 19, 1936, appeared a contribution "Delivery and Care of the New-Born Infant of the Diabetic Mother," by Drs. Lawrence M. Randall and Edward H. Ryncarson of Rochester, Minn. Their observations are of such importance that they should not be overlooked. Their experiences demonstrate the occurrence of certain signs and symptoms associated with hypoglycemia in babies of diabetic mothers. It is not only true, as they suggest, that some deaths in infants born of nondiabetic mothers may be associated with hypoglycemic conditions, but undoubtedly the signs and symptoms such as they describe are rather frequently seen in babies of nondiabetic inheritance.

In their cases there were valid reasons for attributing their etiology to malfunction of the pancreas. In infants of nondiabetic mothers, although as has been reported in the literature the pancreas may be at fault, one will probably as a rule need to look elsewhere for the cause of the disturbances. Although certain of the symptoms may disappear following irradiation over the thymus area, with our present knowledge one can hardly put the blame for the disorders, at least entirely, on the size of the thymus. For the present, we are hardly justified in concluding that the thymus gland functionally has or has not anything to do with the production of the various signs and symptoms under discussion.

The idea (Petersen) that the effects of the roentgen rays are those of nonspecific protein reactions points to the vegetative nervous system and to the endocrines as possible if not probable etiologic factors. In my experience, the theory involving hypocalcemia (tetany of the new-born), as a primary etiologic factor will seldom hold, either in the laboratory or therapeutically. The same is true of considering cerebral edema as a primary factor in the production of the symptomatology. Furthermore, how can one accurately diagnose cerebral edema (Shannon) in a babe without doing a spinal puncture? Even the ascertained presence of the edema does not of itself give the cause of the edema. Experience has convinced me of the truth of the statement "The symptoms of cerebral edema and anemia are the same" (McLeod). Newer information tends to indicate that the vitamin-B complex deficiency conjecture (Dennett, Moore) may not be so far different from the imbalanced neuro-endocrine (vagotonia) hypothesis (Aldrich).

In Randall and Ryncarson's cases a true hyperinsulinism gives a valid reason for the hypoglycemia and associated symptoms. In the disorders of infants of nondiabetic mothers which simulate those which these authors describe, a hyperinsulinism is probably present. The hyperinsulinism is, however, probably a relative one rather than a true one. In other words, in many of the cases, if not in the majority of them, the hypoglycemia and symptomatology may very probably be due to a hypoactivity of the sympathetic system rather than to an actual hyperactivity of the parasympathetic system.

There are several good reasons why one may believe that such a disturbed neurohormone balance may be an important etiologic factor in the occurrence of these peculiar clinical syndromes in certain babes. In the first place, the mothers of these little patients frequently manifest evidences of an endocrine abnormality, particularly of the thyroid. The physiologic postnatal involution of the adrenals and the early inactivity of the infant's thyroid, either or both of which may be exaggerated in those infants whose inherent constitutional weakness (diatheses) may probably cause certain ones to be abnormally sensitive to their environmental stimuli in my opinion, supply a suitable basis for the origin of the disorders under discussion. Furthermore, that this hypersensitiveness may persist in later life in some individuals is manifested by allergic disorders, susceptibility to infections, and obvious endocrine diseases. Finally,

the usual finding of a hypoglycemia and the consistent relief of the signs and symptoms following treatment based on the neuro-endocrine hypothesis should be pretty convincing evidence. So many things may affect the dextrose metabolism of infants that one cannot depend too much on the blood-dextrose tests. Experience has convinced me of that. Randall and Ryncarson's cases also demonstrate that a hypoglycemia may not necessarily be found. They believe as I do that the history, the clinical results and a therapeutic test are of more value, especially after other possibilities, particularly anatomic disturbances, have been eliminated as nearly as possible. When one has had, as I have had, during the past seven years, the repeated experience of seeing cases of the kind we are discussing effectively relieved following the administration of whole adrenal gland, and at times thyroid gland with appropriate feeding (*Illinois M. J.* 61:345-355 [April] 1932; *Arch. Pediat.* 53:851-866 [Dec.] 1933; *M. Rec.* 140:189-193 [Aug. 15] 1934; *Illinois M. J.* 70:244-250 [Sept.] 1936), one can hardly ignore such observations.

Just a word or two more. On page 997 of the same issue of THE JOURNAL which contains Randall and Ryncarson's article there is an abstract (Thymic Death and Meteorological Environment) by Dr. S. A. Levinson which is particularly pertinent. Finally, D. B. Calvin (*Proc. Soc. Exper. Biol. & Med.* 34:724 [June] 1936) has recently presented experimental observations which are very apropos.

ORVILLE BARBOUR, M.D., Peoria, Ill.

### Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

#### TESTS FOR SYPHILIS IN BLOOD DONORS

To the Editor:—What is considered the most practicable test for syphilis among prospective donors of blood to use in a little town? I have the equipment for taking and giving the blood but no way of determining the Kahn reaction except by mailing specimens to Jacksonville, Fla. I can be of real service here if I can give transfusions, as most of the people cannot afford hospitalization in West Palm Beach or elsewhere and no county organization will put up the money. I can construct shaker and water bath or other equipment but have forgotten the details of the Kahn test, which I suppose is the most likely test to be set up at small expense (granted I make a little equipment). Collections are too small for me to buy any such equipment as La Motte's for the "Kline Slide Test for Syphilis." And so if you could send me a protocol for an applicable test under the conditions in this city and suggest a drug house which sells in the region, I would appreciate it greatly. I am going to expose myself to the charge of radicalism by suggesting that there may be some method of applying nearsphenamine to a prospective donor's blood, either before withdrawal or in vitro, which would render it innocuous from the standpoint of transmitting syphilis. Perhaps some work has been done already along this line.

G. J. POTTER, M.D., Clewiston, Fla.

ANSWER.—The Kahn test is generally considered practicable for testing the blood of prospective donors for blood transfusion. But any test for syphilis requires, for dependable results, expert knowledge in its performance.

Reagents for performing a Kahn test consist of (1) standard Kahn antigen, (2) physiologic solution of sodium chloride and (3) the blood serum to be tested, obtained by permitting the withdrawn blood to clot and by separating the serum from the clot after centrifugation. This serum is heated for thirty minutes in a water bath at 56 C. and is then ready for use in the test.

Equipment for performing a Kahn test consists of (1) two antigen vials for mixing the antigen with physiologic solution of sodium chloride, (2) a 0.2 cc. pipet graduated in 0.001 cc. for measuring the antigen-saline suspension, (3) three test tubes about 1 cm. in diameter and 7.5 cm. in height, (4) a 1 cc. pipet graduated in 0.01 cc. for measuring the serum to be tested, and (5) a test tube rack.

In performing the test the first step is to prepare the antigen-saline suspension. The amounts of antigen and physiologic solution of sodium chloride to use depend on the "titer" of

the antigen and are indicated on the label of the antigen bottle. The required amount of salt solution is measured into one of the antigen vials and the antigen in the other vial. The salt solution is poured into the antigen and the mixture poured rapidly back and forth one vial into the other about six times to assure thorough mixing. The antigen-saline suspension is permitted to stand for ten minutes. After this period, the following three quantities of the suspension are measured by means of the 0.2 cc. pipet into the three test tubes: 0.05 cc. into tube 1, 0.025 cc. into tube 2 and 0.0125 cc. into tube 3. These quantities are deposited in each case to the bottom of the tubes. To each tube is then added 0.15 cc. quantities of the heated serum, and the rack is shaken to permit thorough mixing of the serum with the antigen suspension. The rack is now shaken for a three minute period, either by means of a shaking apparatus or by hand. This step is followed by adding 1 cc. of salt solution to tube 1 and 0.5 cc. to tubes 2 and 3. After mixing, it will be found that, if the serum tested came from a nonsyphilitic person, no visible precipitate will be present, but if the serum came from a syphilitic person, a precipitate will be suspended in the fluid. Marked precipitation in the tubes is read four plus; weaker precipitation is read three plus, two plus, one plus or doubtful, depending on the degree of precipitation. The final result of the test represents the average reading of the three tubes. Thus, the Kahn reaction is reported four plus if each of the three tubes gives a reading of four plus. If the readings in the three tubes are negative, two plus, four plus, the final reaction is two plus. When testing the serum of a donor, it is necessary at the same time to test also several control serums, both of nonsyphilitic and of syphilitic origin.

Standard Kahn antigen for this purpose will undoubtedly be furnished by the State Health Department Laboratories at Jacksonville, although it may be obtained also from any of the representative biological houses.

The suggestion of mixing a prospective donor's blood with nearsphenamine is an interesting one. It would, however, require extensive research to determine the quantities of this drug to employ with given amounts of syphilitic blood containing definite numbers of spirochetes. It is obviously far simpler and safer to employ blood from nonsyphilitic persons than to attempt to employ "sterilized" blood from those who are syphilitic.

#### GONADOTROPIC SUBSTANCE AND DESCENT OF TESTIS

To the Editor:—Will you kindly refer this letter to the writer of the editorial entitled "Clinical Application of Hormones of Anterior Pituitary and Gonads," which appeared in THE JOURNAL Oct. 24, 1936? I would like to have such figures and facts as may have been collected in proof of the statement "It is somewhat difficult to find an article reporting the failure to produce descent of the testes by injection of gonadotropic substance, yet many such failures occur." This statement is pertinent to some results in endocrine therapy of cryptorchidism in which I am interested.

JAMES B. HAMILTON, Ph.D., Albany, N. Y.

ANSWER.—The sentence quoted from the editorial is a little lost without its context, but the thought was that there is a great deficiency of articles in the literature on the subject of the treatment of undescended testes. The facts are obvious, namely, that the literature is filled with glowing reports and that only rarely can any one find an article reporting failure, yet success does not always attend such efforts. One well known urologist comments on the fact that most of the pictures illustrating such articles showing the condition before and after treatment almost invariably show a well developed scrotum before gonadotropic substances are injected. It has been his experience that in the presence of a well developed scrotum there is almost invariably descent, although sometimes the descent is a little later than is normally seen.

Since the editorial mentioned was published, the Central Society for Clinical Research has met. On that occasion Dr. W. O. Thompson and his associates from Chicago presented a paper entitled "The Present Status of the Treatment of Undescended Testes." The author's abstract says: "In contrast to the large percentage of successful results (70 per cent on the average) reported by various observers in the treatment of undescended testes with an anterior pituitary-like substance, we were able to produce descent in only about 20 per cent of the cases. In four or five cases showing descent, the testis could be pulled to the upper end of the scrotum or nearly to this level before treatment was started. In all successful cases descent occurred within one month, but stimulation of genital growth persisted for a much longer time. In all patients treated surgically after prolonged administration of anterior pituitary-like substance, anatomic factors making descent difficult or impossible were present. However, the stimulation of genital

growth produced by preoperative treatment with this material seemed to make surgical procedures less difficult. It would thus appear that, in the present state of our knowledge, operative procedures are necessary in most cases of undescended testes but should be preceded by from four to six months of treatment with anterior pituitary-like substance."

#### PSYCHASTHENIA IN CHILD

To the Editor:—A white boy, aged 13 years, seen in December 1935, refused to attend school because of a burning sensation in the epigastrium, which was present on arising and continued until about 10 a. m. If the boy slept late in the morning there was no discomfort. The burning sensation became worse if he attended school and continued throughout the day. It was decided to have him attend school in the afternoon, but then in the afternoons when he was ready for school a transient diarrhea developed which precluded this. He was a normal, full-term child, who talked at 7 months, teething at 1 year and walked at 16 months. At 5 years of age he had an attack of chorea which persisted until he was 9, when following an acute febrile infection lasting about three weeks he was apparently cured. He was vaccinated at 6. He had frequent sore throats with marked cervical adenopathy. He had enuresis until 11 years of age, which ceased after an attack of chickenpox. At the onset of the chickenpox, he fainted in school. Since then because he frequently had marked flushing of his face, especially when he attempted to read, the teachers sent him home. They were afraid he would faint. About one year ago, he finally refused to attend school. He was sent to another school, but although his behavior was excellent and his grades good the epigastric discomfort ended his attendance. At home he is usually quiet, though he is subject to frequent outbursts of temper when he does not have his own way. He doesn't associate much with other children. His parents are worrisome but apparently in good health. His mother had two miscarriages, at three and five months, prior to the birth of the patient. There is another child, a boy, aged 7 years, who is thin but healthy and active. There is no history of familial or hereditary diseases. The family is of moderate means. The patient is a well nourished, pre-adolescent boy, weighing 95 pounds (43 Kg.). He is unable to sit quiet. He scarcely opens his mouth when talking and his voice is whining in character. The cheeks are flushed at all times. The temperature is normal. The pulse varies from 90 to 110. The systolic blood pressure ranges from 130 to 180 (usually 160) and the diastolic pressure is 80. There is no abnormal fat distribution. The contour of the head is normal. The ears and eyes are normal. There is an occasional purulent discharge from the nose. The teeth and tongue are normal. The tonsils are enlarged. There is a palpable cervical adenopathy. The thyroid is not enlarged. The chest is essentially normal. The heart beat is rapid and forceful, with a presystolic mitral murmur. Peristalsis is hyperactive. There is no tenderness of the abdomen. There are no palpable masses or enlarged organs. The genitalia are normal, preadolescent. Both testicles are descended. The rectum externally is normal. The hands are cold and purplish; there is visible perspiration; there are no tremors. The reflexes are slightly exaggerated. The Babinski reflex is negative. There are no eruptions on the skin. There was axillary sudation during the examinations. There is no tenderness of the back or deformity of the spinal column. The urine is normal. Hemoglobin is 14 Gm. Red blood cells number 4,800,000; white blood cells 5,000; neutrophils 65 per cent; lymphocytes 30 per cent; eosinophils 2 per cent; basophils 1 per cent; myelocytes 2 per cent. The Wassermann reaction of the blood is negative. Tuberculin tests are negative. Roentgenograms of the skull, chest and abdomen reveal a small pituitary fossa, a cardiac silhouette suggestive of mitral disease, enlargement of the spleen and the liver, and coarse trabeculations in the spine and pelvis and ribs. There are no other significant manifestations. Please omit name. M.D., Pennsylvania.

ANSWER.—The history of this boy indicates that he is of a neuropathic nature if not of a psychasthenic type. It is significant that he developed normally, talking at 7 months, and equally important is the fact that he had a persistent chorea from the fifth to the ninth year and an acute febrile infection of three weeks' duration. An attack of chorea lasting four years suggests the possibility of an encephalitis at that time, and the present symptoms might be interpreted as postencephalitic behavior disorders. The symptoms such as flushing, cold and purplish hands seem to indicate a lack of vasomotor stability. In the absence of more definite signs one would be inclined to interpret the burning sensation in the stomach as an indication of a gastric neurosis. In addition to the various tests that have already been made it would seem advisable to observe the daily temperature course, to note the presence of tremors and the pulse rate, and to obtain the basal metabolic rate in order to show the presence or absence of a hyperthyroidism. Some stress has recently been laid on the relationship of hypoglycemia to nervous symptoms such as have been described; consequently it might be well to estimate the blood sugar. In view of the possible postencephalitic character of the condition it would be well to repeat all the neurologic tests, including an ophthalmologic examination and a routine visual test.

The management of such a boy as a rule causes anxiety and difficulty for the parents and discomfort to the attending physician. The time comes when he is almost unmanageable in the home. It should not be forgotten that a patient with

such symptoms as this boy presents may develop a genuine psychosis. If the boy could be sent to a school away from home, to a summer camp, or placed in the hands of considerate and intelligent friends, some improvement might result. It would seem that if no tangible evidence of organic or functional cerebral disease can be elicited, it would be in the interest of this boy to seek the advice of a psychiatrist.

#### SURFACE TENSION OF MALIGNANT CELLS

To the Editor:—I am interested in obtaining information regarding the surface tension determinations in malignant cells. Any information, reprints and abstracts covering this subject would be greatly appreciated.

Roy J. POPKIN, M.D., Los Angeles.

ANSWER.—The direct determination of surface tension of individual malignant cells cannot be satisfactorily made because such cells when isolated in culture or otherwise can never be considered as existing under the same conditions as they would in the body. A considerable number of studies have been made by determining the surface tension of extracts from cancer cells, but obviously the surface tension so determined cannot be considered as being the same as that of the uninjured cell. A bibliography of pertinent observations, including studies on permeability which is not the same as surface tension necessarily, is appended.

Bauer, E.: Theoretische und experimentelle Untersuchungen über die Entstehungsbedingungen des Carcinoms: Zugleich ein Beitrag zur Frage des konstitutionellen Momentes, *Ztschr. f. Krebsforsch.* 20: 358, 1923. Lowered surface tension in blood serum of carcinoma patients.

Bauer, E.: Weitere Beweise der Bedeutung der verminderten Oberflächenspannung für das Entstehen und Wachstum des Krebses, *München, med. Wchnschr.* 72: 1723 (Oct. 9) 1925. Treatment based on lowered surface tension.

Bauer, E., and Lasnitzki, A.: Oberflächenspannung und Metastasen-häufigkeit, *Klin. Wchnschr.* 4: 395 (Feb. 26) 1925. Parallel between frequency of metastases and surface tension of their press juice.

Blumenthal, Ferdinand: Ueber das Wachstum bösartiger Geschwulste, *Med. Klin.* 20: 555 (April 27) 1924. General review of recent work, with special reference to Bauer's hypothesis of lowered surface tension.

Saitchenko, A.: Altersveränderungen der Oberflächenspannung des Blutserum (Ein Beitrag zur Frage der Altersdisposition für Krebs), *Biochem. Ztschr.* 219: 447, 1930. Surface tension decreases with age. As cancer increases with age, the observations support the view that lowered surface tension favors the development of cancer.

Baturenko, T., and Timofejewa, L.: Zur Frage der Oberflächenspannung des regenerativen Gewebes, *Ztschr. f. Krebsforsch.* 37: 436, 1932.

Krontowski, A. A.: Bereschanski, P. G., and Majeroski, M. M.: Untersuchungen über die Oberflächenaktivität der beim Wachstum und Zerfall der Gewebe in vitro gebildeten Substanzen, *Arch. f. exper. Zellforsch.* 4: 85, 1927; abstr. *Cancer Review* 2: 408, 1927.

Hennemann, I. P.: Oppervlaktespanning bij kwaadaardige gezwellen, *Geneesk. Tijdschr., Nederl. Indië* 72: 1278 (Sept. 13) 1932. Surface tension extracts of a transplantable Cysticercus rat sarcoma higher than normal, but that of extracts of a similar spontaneous sarcoma the same as extracts of liver and muscle.

Hoffmann, C.: Beitrag zur Frage der Krebsentstehung durch Oberflächenaktivität, *Ztschr. f. Krebsforsch.* 38: 665, 1933. Surface active materials produced no tumors in guinea-pig.

Kaneko, S.: Lowering of the Surface Tension of the Blood Plasma of Sarcoma-Bearing Chicken, *Tr. Jap. Path. Soc.* 22: 966, 1932; abstr. *Ztschr. f. Krebsforsch.*, ref. 39: 105, 1933.

Kagan, C.: Der Einfluss der künstlichen Oberflächenspannungs-erniedrigung auf das Wachstum transplantabler carcinome, *Ztschr. f. Krebsforsch.* 21: 453, 1924. Tumor emulsion exposed to tributyrin lowers surface tension. Tumors seem to appear somewhat earlier and reach a somewhat larger size, but only twenty-two mice were employed.

Kagan, C.: Ueber die Oberflächenspannung in Extrakten aus malignen Tumoren, *Ztschr. f. Krebsforsch.* 21: 155, 1924. Surface tension of colloids from cancer lower than that of corresponding normal tissues.

Maksimovic, B.: Zur Frage der Oberflächenspannung des Blutserums bei bösartigen Neubildungen, *Ztschr. f. Krebsforsch.* 40: 177, 1934. Extract has neither diagnostic nor prognostic value.

Svehla, K.: Les relations entre la tension superficielle du sérum du sang et sa teneur en calcium dans le carcinome, *Compt. rend. Soc. de biol.* 94: 980, 1926. Lowered surface tension of cancer patients is in direct proportion to the lowering of the calcium content of the serum.

Kopaczewski, W.: Permabilité cellulaire et problème du cancer, *Le François, Paris*, 1934. Reviewed in *Index Anal. Cancrolog.* 5: 581, 1934. Cancer, possibly due to increase in permeability of cell periphery.

Kopaczewski, W.: Tension superficielle des substances cancéreuses, *Compt. rend. Soc. de biol.* 118: 1142, 1935.

The most recent articles are the following:

Traube, and Knake, E.: Ueber die Regulierung des Wachstumsgleichgewichtes von Epithel und Bindegewebe durch Faktoren, welche die Zellpermeabilität erhöhen und ihre Bedeutung für das Krebsproblem, *Ztschr. f. Krebsforsch.* 42: 324, 1935. Significance of surface tension for growth in general and for cancer in particular.

Knake, Else: Ueber die Bedeutung der Permeabilität das Gewebewachstum, *Ztschr. f. Krebsforsch.* 42: 329, 1935. Changes in cell permeability exert an influence on growth.

Heubner, W., and Orezehowski, G.: Permeabilität und Wachstum. Bemerkungen zu der Mitteilung von Else Knake, *Ztschr. f. Krebsforsch.* 42: 329; 42: 284, 1936. Knake and Traube have drawn deductions which are not warranted by their facts.

Kikuchi, T., and Kawanishi, G.: Surface Tension of the Tissue of Uterine Tumor, *Jap. J. Obst. & Gynec.* 18: 340, 1935; abstr. *Am. J. Cancer* 26: 796 (April) 1936, as follows: Many investigators have recorded their determinations of the surface tension of blood or tissue fluids in malignant disease, but not one has stated when the readings were made. Yet, as surface tension decreases with the lapse of time, this is an important point. Taking the factor of time into consideration, the author compared extracts of uterine carcinoma, myoma and chorionepithelioma with those prepared from normal portions of the corresponding uteri, using a Hartmann-Braun torsion balance after Brinkmann's method. Extracts of all three tumors had a surface tension lower than the control preparation. The material examined consisted of ten carcinomas, ten myomas and five chorionepitheliomas.

#### GASTRORRHAGIA

To the Editor:—I have recently had occasion to look after a case of "gastrorrhagia" in a man, aged 26. At the age of 10 years he had the small veins of his nose cauterized because of severe attacks of prolonged epistaxis. Subsequently there were no further attacks of nasal bleeding but at frequent intervals the patient was prostrated by severe gastric hemorrhages, which recurred every two to six months over a period of ten years. All treatment, with the exception of transfusion, failed. The patient was given several transfusions at each attack. (He received eighty-seven transfusions in from five to seven years.) At one time peptic ulcer was suspected (although x-ray examination was negative) and a posterior gastro-entrostomy was done with no apparent benefit. The patient still had attacks of bleeding. Finally, when he was 26 years of age, he died during a severe hemorrhage. All the laboratory examinations gave normal results except for the manifestations of a secondary anemia during the periods of relapse. The platelet counts and clotting and bleeding time tests were all normal. No evidence of blood dyscrasia could ever be demonstrated. At the autopsy all organs were normal except for the stomach, which contained many small punctate erosions in the lining, about 100 in all, from which bleeding had obviously occurred. Under the microscope, these appear merely as small superficial regions of necrosis in the mucosa. I would greatly appreciate information regarding the name of this condition, references to literature and any other pertinent information that you might have. Kindly omit name.

M.D., Washington.

ANSWER.—This is a good description of a disease that perhaps deserves a special name. No description of it appears to have been published but during the last several years a number of cases have been seen. Curiously a number of the victims were physicians. In one of the worst of these cases there was some family history of similar bleeding. One patient was seen to bleed to death, and the necropsy showed absolutely nothing that could be recognized as a bleeding point. In some cases there were some symptoms suggesting ulcer, and in others there were no such symptoms. Operations were futile, as one might expect.

Fortunately, a large percentage of the patients are able to survive many severe hemorrhages. One physician has now gone several years without bleeding, but naturally he lives in constant dread of another attack. In most of the cases expert hematologists were unable to find changes in the blood characteristic of any known disease in which bleeding is common. There has been a suggestion in one or two cases that allergy may be a factor. Naturally, treatment is very difficult when the mechanism of the disease is unknown. In a few cases Dr. Charles Watkins of the Mayo Clinic has found moccasin venom to work beautifully. It deserves further trial. In every case, expert hematologists should be consulted.

#### ETIOLOGY OF GRANULOCYTOPENIA

To the Editor:—Could subjection to gases from burning coals and ashes over about a period of six months be conducive to the production of agranulocytic angina? The coal in question is semianthracite. Kindly omit name if published.

M.D., Pennsylvania.

ANSWER.—The amount and variety of gases given off by burning anthracite coal are dependent on the conditions under which the combustion occurs. If combustion is incomplete it is possible that the smoke and fumes may contain a wide range of compounds, including benzene and the so-called coal tar products. If combustion is complete with an adequate oxygen supply and the residue burned to an ash, it is unlikely that such compounds are given off in appreciable amounts.

Assuming, however, that an individual is subjected to such compounds by inhalation over a period of six months, it is again problematic whether the inhalation of such products could produce agranulocytosis. There is some evidence that it is possible especially if the fumes contain benzene (C<sub>6</sub>H<sub>6</sub>). It has been demonstrated that the injection of benzene does consistently produce the hematologic picture of agranulocytosis in rabbits (Kracke, R. R.: *Am. J. Clin. Path.* 2: 11 [Jan.] 1932). However, when rabbits are subjected to inhalation of this chemical, no hematologic changes result. It would appear that a pulmonary defensive mechanism prevents its development.

Furthermore, leukocytic depression has not been observed often in workers who inhale benzene for many years (Hamilton, Alice: Industrial Poisoning, New York, Macmillan Company, 1925).

To summarize, it appears possible that such conditions could be conducive to the production of agranulocytosis. It would depend on the type of fumes given off, and on the presumption that the inhalation of these could so depress the hematopoietic centers as to result in leukocytic depression. The entire question is one that deserves investigation by those who work in the field of industrial medicine.

#### PERFUMES AND ORRIS ROOT—CHICLE—PEANUT BUTTER AND SOY BEAN—"SPRY"

To the Editor:—1. Are there any perfumes on the market that can be safely used by a patient sensitive to orris root? 2. What are the ingredients of Wrigley's chewing gum to which an allergic patient might be sensitive? 3. Does most peanut butter contain soy bean? Can you give me the name of some brand that does not? 4. Can you tell me the ingredients of the shortening "Spry"?

LOUISE O. KAPPES, M.D., Evanston, Ill.

ANSWER.—1. Orris is used in cosmetics as an absorbing agent for perfumes. Patients sensitive to orris root are not necessarily sensitive to perfumes. If such sensitivity is present, its determination is a specific problem in each individual case and for each perfume.

2. The main ingredient in all chewing gums is chicle. Chicle sensitivity is not common but has been described. Sensitivity to other substances used for flavoring, as peppermint or spearmint, is likewise uncommon.

3. Peanut butter, if so labeled, does not contain any soy bean product unless it is used as an adulterant. If contained in such product this should be stated on the label in accordance with the Food and Drug regulations.

4. The composition of the shortening "Spry" is a trade secret. Most shortenings on the market are composed of hydrogenated cottonseed oil. Hydrogenated coconut oil and corn oil are frequently mixed with this.

#### FUNCTIONAL VOMITING

To the Editor:—A white woman, aged 28, married, a high school teacher, presents the chief complaint of nausea and vomiting at frequent intervals over a period of six months. She has been susceptible to ear sickness and sea sickness for about six years, but prior to the present illness there was no history of apparently causeless vomiting. Her appendix was removed in 1921, and in 1932 an operation was performed for a cystic ovary, at which time some adhesions from the previous operation were released. Following the second operation she experienced severe vomiting for three days and nights, which stopped suddenly, and the convalescence was otherwise uneventful. In November 1935 she began to be nauseated at frequent intervals, often with vomiting, and principally in the morning. At one time she was in bed for a week, and at times the vomiting was "almost constant." It seems to be brought on by excitement. Nausea is definitely relieved by lying down, to a less extent by vomiting, and is made worse by eating. She has been married for eight months but has had no menstrual irregularity at any time and presents no indications of pregnancy. Recently she also complained of a slight evening rise of temperature—to about 99.6 F. Physical and x-ray examinations of the chest are negative. Fluoroscopic examination of the stomach shows an organ hanging well below the iliac crests. When she first swallowed the barium it seemed as though there was a constriction between the fundus and the dependent portion, but this opened up as more barium was taken. After an hour the barium had collected in the dependent portion, and almost none had passed into the duodenum. We have advised more frequent feedings of a nonirritating nature, support and atropine. It is too soon to tell whether this will bring any results, but we are anxious to have any help that is available.

M.D., Virgin Islands.

ANSWER.—The impression gained from the history is that the woman is suffering with some type of functional vomiting or regurgitation. It would help greatly to know whether the trouble is regurgitation rather than vomiting. With nervous regurgitation mouthfuls of food begin to come up often before the patient leaves the table, and there is no complaint either of nausea or of retching. This syndrome is a definite clinical entity, and the cause must be a nervous one because operations are practically always useless, even when a gallstone or a diseased ovary or suspicious looking appendix can be found on abdominal exploration.

It would be most helpful to find out whether this woman is entirely satisfied with her marriage or if she is much afraid of pregnancy. Treatment should consist mainly of rest and psychotherapy. The patient should understand that she must make a big effort to keep food down. Otherwise, the regurgitation increases in severity like a bad habit. Rest in bed often

helps. Sometimes feeding by stomach tube helps if the patient knows that this will be discontinued when she learns to hold her food down. Sedatives may have to be used. A dry type of diet may be helpful, the patient taking necessary liquids between meals.

If the patient keeps a record she may find that some one food is regurgitated more than others are and the removal of such food from the diet may bring considerable relief. The giving for two days of an elimination diet consisting of only lamb and rice will often tell whether modification of the diet will help at all.

Constipation should be avoided since the stagnation of material in the colon can produce back pressure in the small bowel, and this increases the tendency to regurgitation. The best way of relieving constipation may be to give a daily enema of physiologic solution of sodium chloride.

In order to succeed with treatment the physician must not waver in his diagnosis; he must not get to wondering out loud whether there might be some lesion present in the abdomen to account for the trouble. As was said before, even when lesions are present they do not produce or even influence the typical syndrome of regurgitation immediately after meals.

#### BENZENE POISONING

To the Editor:—I am treating a man, aged 45, who has an aplastic anemia due to benzene poisoning. He has had whole blood transfusions of matched and typed blood by the Vincent tube method. He does not respond to liver diet, diluted hydrochloric acid or pentnucleotide. What more can I do with reason and safety? The man is in a hospital where we may have every help. Kindly give reference to reports from THE JOURNAL.

C. R. LEWIS, M.D., Akron, Ohio.

ANSWER.—The chief therapeutic measure in the management of benzene poisoning is transfusion, either with whole blood or with citrated blood. The citrated blood method has the advantage that cutting down on the vein is not necessary and that preservation of a vein for repeated transfusions is possible. It is important to transfuse primarily to control bleeding and not simply for anemia. The beneficial effect of transfusion on the hemorrhagic tendency may last from two to five days. Mechanical means of controlling bleeding, such as packing the nose, are dangerous, as tissue ischemia, necrosis and secondary infection may easily occur with the neutropenia common in benzene poisoning. No specific benefit will be obtained from any type of substitution therapy, such as the use of liver, stomach, iron or vitamin preparations. However, to assure optimal conditions for blood production, the oral administration of iron and liver or stomach preparations should be carried out. Parenteral liver extract is undesirable because of the increased possibility of infection at the site of injections if neutropenia is present. Pentnucleotide may be used but probably has no specific benefit in this condition and again demands injection. If severe neutropenia and secondary sepsis do not occur and bleeding can be controlled by frequent transfusions, there is a good possibility that after a time the bone marrow will begin to supply more red cells, granulocytes and platelets, and therefore anemia, leukopenia and purpura will be diminished. A normal erythrocyte count will ordinarily not be regained before many weeks or until erythrocyte production has returned to a normal level. Patients with severe neutropenia and/or fever usually, but by no means invariably, have a poor prognosis.

#### VITILIGO

To the Editor:—A Mexican, aged 28, had a nervous breakdown a year ago. Two months after the breakdown, disseminated spots of white depigmentation broke out on the skin on the left side of the neck. His weight is about 200 pounds (91 Kg.). I have tested all the reflexes and found all responding and in normal condition. I have diagnosed the condition as vitiligo. Please state whether this diagnosis is correct; also the best and most accepted treatment in such cases. Please omit name.

M.D., California.

ANSWER.—The occurrence of "disseminated spots of white depigmentation" with the absence of atrophy in the patches is called vitiligo, or acquired leukoderma.

The specific etiology of vitiligo is unknown, and it has been attributed to neurotic disturbances, trophoneurosis, endocrine disturbances and hereditary defects. It may follow or be associated with other dermatoses.

The course is slow, chronic and usually progressive. No specific effective therapeutic agent has been found to date. Locally, the surrounding skin may be bleached with 5 to 10 per cent ammoniated mercury ointment or 10 per cent hydrogen peroxide in anhydrous wool fat and petrolatum. The bathing

of the depigmented patches with 10 per cent of oil of bergamot in alcohol, and subsequent exposure of the site to ultraviolet rays or strong sunlight, is sometimes effective in increasing pigmentation of the sites. Gold sodium thiosulfate, intravenously (Lindsay, H. C. L.: Treatment of Leukoderma with Gold Sodium Thiosulfate, *Arch. Dermat & Syph.* 20:22 [July] 1929) has been used in some of these cases. Its use, however, has produced variable results in different hands.

#### ETHYL ACETATE AS INDUSTRIAL HAZARD

*To the Editor:*—I have recently received a communication stating that an industrial concern has started using ethyl acetate (acetic ether) in one of its production lines to dissolve the surface of a cellulose lens. This is done for the purpose of making the lens adhere to a metal surface. The fumes are very strong and the question is whether fumes from ethyl acetate when applied to a cellulose lens are harmful to the operators performing the work.

MERRILL S. DAVIS, M.D., Marion, Ind.

**ANSWER.**—Ethyl acetate ( $C_4H_8O_2$ ) is relatively unimportant as a toxic agent. This substance is widely used as a constituent of lacquers, solvents, thinners and other coating materials. Skin contact has led to occupational dermatitis, and its vapors are known to be a minor irritant to the eyes and the respiratory tract. This agent has been investigated by H. F. Smyth and H. F. Smyth Jr. (Inhalation Experiments with Certain Lacquer Solvents, *J. Indust. Hyg.* 10:261 [Oct.] 1928). From their animal experiments no evidence developed indicative of marked toxic properties. It is believed that ethyl acetate is scarcely more culpable as a dangerous industrial material than is the more widely used amyl acetate—"banana oil." If arbitrarily the toxicity of benzene is fixed at 100, the order of toxicity of ethyl acetate may be associated with the figure of 10. Ethyl acetate is not extensively used as a single solvent or a thinner but more often is found as one of several constituents in coating materials. In the instance mentioned in the query, due inquiry should establish that ethyl acetate alone is used. If employed along with benzene and toluene, these other agents are to be regarded with greater apprehension as sources of harm to exposed workers. If in fact ethyl acetate is used as the sole agent, and as a substitute for the more toxic hydrocarbons, this procedure is to be commended. Nevertheless, apart from toxic properties, the discomforting effects of these vapors may be such as to warrant general ventilation.

#### PERSISTENT SUBNORMAL TEMPERATURE

*To the Editor:*—What conditions would cause a persistent subnormal temperature of 97 to 98 F., with a slow pulse of from 55 to 65? The patient suffers from marked constipation and has nightly dreams of holdups and murders. His blood pressure is 120 systolic, 90 diastolic. The patient is 48 years old, 5 feet 10 inches (178 cm.) tall and weighs 192 pounds (87 Kg.). He has a good appetite and is physically in excellent shape except that at times he tires easily. The heart, kidneys and lungs are normal. He looks very healthy. Please omit name.

M.D., California.

**ANSWER.**—An electrocardiographic study and determination of the basal metabolic rate should be undertaken. If both of these are normal, the subnormal temperature and slow pulse can probably be accepted as simple variations from the normal, in view of the statements about the general health of the patient. H. A. Reimann (Habitual Hyperthermia, *Arch. Int. Med.* 55: 792 [May] 1935) has shown that approximately 10 per cent of the normal population has a body temperature less than 98 F. Bradycardia is not uncommonly noted in individuals without any apparent disease. The very slight possibility of hypoglycemia (Ormond, A. P.: Bradycardia Due to Spontaneous Hypoglycemia, *THE JOURNAL*, May 16, 1936, p. 1726) may be considered.

#### SALIVATION WITH DENTURES

*To the Editor:*—Please send me information for treatment of excessive salivation due to false teeth. Please omit name.

M.D., Illinois.

**ANSWER.**—Excessive salivation after the placing of dentures is not uncommon. It may have a reflex origin from irritation of the denture or it may be purely psychologic. First, the denture should be carefully examined to determine that there are no technical defects. It should be specially noted, first, that the periphery of the denture is not improperly placed; secondly, that there are no areas of excessive pressure on the mucous membrane; thirdly, that the occlusal plane is properly placed. The improper placing of the occlusal plane, that is, the opening of the bite, will cause disturbances in the tension of the muscles

of mastication and abnormal relations in the temporal mandibular articulation, either of which may cause reflexes affecting the flow of saliva.

Probably the commonest cause is purely this: The consciousness of the dentures in the mouth and the adjustment to the new dentures excite the flow of saliva. The best treatment is the use of a mild sedative, such as medium doses of potassium bromide. Small doses of atropine for a very short time are sometimes effective.

It should of course be determined that there is no other cause for the salivation.

#### PSYCHIATRIC DEFINITIONS

*To the Editor:*—Please define, for psychiatric purposes, level, mood, sensorium, insight, judgment, and stream of talk.

WILLIAM J. O'DONNELL, M.D., Buffalo.

**ANSWER.**—Level: The sphere in which a tendency expresses itself, particularly with relation to development toward (a) consciousness and (b) adult activity.

Mood: A moderate emotion of relatively long duration caused by an unconscious tendency which colors conscious impressions.

Sensorium: The group of sensory receptors and their pathways to conscious and subconscious cortical centers.

Insight: Conscious intellectual and emotional understanding.

Judgment: The capacity to arrive at a view by relating ideas or situations through a process of reasoning.

Stream of talk: The verbal productivity of the patient (characterized as to such traits as rate, coherence or content).

#### COMBINED INFECTION OF THROAT

*To the Editor:*—I have recently treated a severe case of throat infection in which there was a superficial ulceration of both tonsils, which were covered with a gray filmy looking exudate from which hemolytic streptococci were recovered. There was marked adenitis and peritonsillar edema. The uvula was markedly edematous. A competent throat specialist was called in consultation and an incision was made into the edematous peritonsillar tissue, but no pus was obtained. A smear was taken at the same time, which showed the presence of Vincent's organisms. The next day the patient appeared better and was able to swallow without much difficulty. However, the consultant administered 5 cc. of 1 per cent solution of antimony and potassium tartrate, intravenously, which was subsequently repeated twice. It was felt by the consultant that this treatment was specific for Vincent's infection. I have been unable to find anything in the literature concerning this treatment and am wondering if you can give me any information as to its rationale. My impression was that the major part of the picture was produced by the presence of the streptococcal infection and that the Vincent organisms probably played a minor part. Kindly omit name.

M.D., Virginia.

**ANSWER.**—Some additional information concerning the case described might be obtained through a report of the blood picture present. It may be that the correspondent is right in his impression that the major part of the picture was produced by the streptococcal infection, particularly as the importance of Vincent's organism in the production of disease is not clear at present.

Antimony has been used in a number of difficult infections and is reported to be of particular value in granuloma inguinale, which is thought by some to be due to a filtrable virus.

#### HUMIDIFICATION AND CLIMATE IN SINUS DISEASE

*To the Editor:*—There seems to be considerable confusion about the harmfulness of the lack of proper room humidification in sinus and bronchitic conditions. Both the steam kettle and the more modern electric humidifier are recommended to increase the water content of the air for these conditions, in spite of the fact that nearly all physicians recommend the dry climate of the Southwest, where the air humidity compares with that of the average unhumidified apartment in New York in the winter time. I would like very much to get an authoritative opinion on this inconsistency. Please omit name.

M.D., New York.

**ANSWER.**—Fundamental differences exist between the atmospheric conditions of the Southwest and of the larger Northern cities. While the atmosphere is termed that of a "dry climate," there is an appreciable amount of humidity in its air. The sunlight, however, is unfiltered by the usual pall of smoke and soot screen. This and the gentler temperature ranges with other fundamental factors are the determinants in selecting the Southwest as a more suitable climate for those afflicted with "sinus" and "bronchitic" conditions.

Obviously the unfortunates afflicted cannot all avail themselves of a sojourn in the recommended region. Hence the use of the steam kettle or the modern electric humidifier to increase the water content of the air is the alternative.

When the air which this type of patient inhales is properly humidified, there is less crust formation, and the secretions become softened and moistened, and are more easily removed from the air passages by the patient.

Thus it is seen that there is no actual inconsistency in recommending a change of climate to that of the Southwest, and advising that the air of the room habitually used by the patient be humidified for those who are compelled to stay at home.

#### TRAUMATIC DISABILITY OF NOSE

*To the Editor:*—I should like information on traumatic disability of the nose. I would particularly like to know the ways and means of estimating disability due to various traumas. I have a complete library on the nose but cannot find this subject.

JOSEPH J. GRIMM, M.D., South Milwaukee, Wis.

**ANSWER.**—Trauma to the nose may result in disability arising from deformity of the nasal septum by (1) obstruction to respiration, (2) interference with the drainage from the sinuses with resulting stasis and infection of one or more sinuses, and (3) obstruction to the olfactory portion of the nose resulting in the loss of the sense of smell. The disability arising from any of these conditions can be estimated only individually by the inconvenience occasioned.

#### MONGOLIAN IDIOCY

*To the Editor:*—I have been treating a family whose first child was a mongolian idiot, living only a few days. They are naturally fearful of having another child. Can you give me some statistics as to the possibilities of similar trouble with another child? Both parents have average inheritance, are in good health and there is no history of alcoholism. Please omit name.

M.D., Nebraska.

**ANSWER.**—Most careful observers of mongolian mental defectives have been of the belief that this condition occurs but once in a family. One reliable observer lists 322 cases with never a repetition in the same family. There have been a few cases reported in the literature of two or even more with this condition occurring in siblings. The prognosis, therefore, that the next child in the present family would not be a mongolian mental defective is extremely good.

#### HAGEDORN-JENSEN METHOD FOR SUGAR DETERMINATION

*To the Editor:*—In *Queries and Minor Notes* in the Oct. 24, 1936, issue of *THE JOURNAL*, the reply to Dr. Lewis's request for a description of the Hagedorn-Jensen method for blood sugar determination includes standardization of the two hundredth normal thiosulfate solution.

As standardization of the thiosulfate solution involves the use of an oxidizing agent, I feel that there is an error in the use of two hundredth normal potassium iodide solution for this standardization. I would suggest the use of the word "iodate" for "iodide."

Gradwohl's book "Clinical Laboratory Methods and Diagnosis" also gives a standard potassium iodide solution for titration of the two hundredth normal thiosulfate solution.

My personal experience has been that the actual test and blank titrations work correctly but that the standardization of the two hundredth normal thiosulfate solution with a standard potassium iodide solution is not possible.

ETTA SELSAM, M.D., Terre Haute, Ind.

#### CLOSED FONTANELS

*To the Editor:*—In *THE JOURNAL*, October 31, in *Queries and Minor Notes* there is a question concerning the early closure of the fontanels. About twelve years ago I delivered an infant that was normal in every way except that the fontanels were completely closed and the skull appeared to be as firm and solid as an adult's. Being greatly concerned about the baby's future development, I called in a well known brain specialist, who gave a very grave prognosis indeed.

I have recently seen the child again and was pleased to note that he had developed normally in every way. His head is of average size but has a peculiar shape. The cranium is narrow and the forehead, instead of being flat or curving, is roughly wedge shaped. However, the mother claims that this is a family characteristic.

EDITH E. JOHNSON, M.D., Palo Alto, Calif.

#### CARE OF COLLODION

*To the Editor:*—After occasionally finding a bottle of collodion dried up when I wanted to use it, I discovered a method of preventing this annoyance. Collodion can be kept in perfect condition indefinitely by the simple procedure of inverting the bottle for a second or two each time the cork is replaced. This allows the collodion to run into the neck of the bottle and form a film on and around the under side of the cork. This prevents evaporation.

WALTER J. ROBBINS, M.D., New Britain, Conn.

## Medical Examinations and Licensure

### COMING EXAMINATIONS

#### STATE AND TERRITORIAL BOARDS

ALABAMA: Montgomery, June 29-July 1. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

ALASKA: Juneau, March 2. Sec., Dr. W. W. Council, Juneau.

ARIZONA: Phoenix, Jan. 5-6. Sec., Dr. J. H. Patterson, 826 Security Bldg., Phoenix.

COLORADO: Denver, Jan. 5. Sec., Dr. Harvey W. Snyder, 422 State Office Bldg., Denver.

CONNECTICUT: *Basic Science*. New Haven, Feb. 13. *Prerequisite to license examination*. Address State Board of Healing Arts, 1895 Yale Station, New Haven.

DELAWARE: Dover, July 13-15. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, Dover.

DISTRICT OF COLUMBIA: Washington, Jan. 11-12. Sec., Commission on Licensure, Dr. George C. Ruhland, 203 District Bldg., Washington.

IDAHO: Boise, April 6. Commissioner of Law Enforcement, Hon. Emmitt Pfost, 205 State House, Boise.

ILLINOIS: Chicago, Jan. 26-28. Superintendent of Registration, Department of Registration and Education, Mr. Homer J. Byrd, Springfield.

INDIANA: Indianapolis, June 22-24. Sec., Board of Medical Registration and Examination, Dr. William R. Davidson, 301 State House, Indianapolis.

IOWA: *Basic Science*. Des Moines, Jan. 12. Sec., Prof. Edward A. Benbrook, Iowa State College, Ames.

MICHIGAN: Ann Arbor and Detroit, June 9-11. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 202-3-4 Hollister Bldg., Lansing.

MINNESOTA: *Basic Science*. Minneapolis, Jan. 5-6. Sec., Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. *Medical*. Minneapolis, Jan. 19-21. Sec., Dr. Julian F. Du Bois, 350 St. Peter St., St. Paul.

MONTANA: Helena, April 6. Sec., Dr. S. A. Cooney, 7 W. 6th Ave., Helena.

NEBRASKA: *Basic Science*. Omaha, Jan. 12-13. Director, Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NEVADA: *Reciprocity*. Carson City, Feb. 1. Sec., Dr. John E. Worden, Carson City.

NEW HAMPSHIRE: Concord, March 11-12. Sec., Board of Registration in Medicine, Dr. Charles Duncan, State House, Concord.

NEW JERSEY: Trenton, June 15-16. Sec., Dr. James J. McGuire, 28 W. State St., Trenton.

NEW MEXICO: Santa Fe, April 12-13. Sec., Dr. Le Grand Ward, Box 693, Santa Fe.

NEW YORK: Albany, Buffalo, New York and Syracuse, Jan. 25-28. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, 315 Education Bldg., Albany.

NORTH DAKOTA: Grand Forks, Jan. 5-8. Sec., Dr. G. M. Williamson, 4½ S. 3rd St., Grand Forks.

OREGON: Portland, Jan. 5-7. Sec., Dr. Joseph F. Wood, 509 Selling Bldg., Portland.

PENNSYLVANIA: Philadelphia, Jan. 5-9. Sec., Board of Medical Education and Licensure, Mr. James A. Newpher, Education Bldg., Harrisburg.

PUERTO RICO: San Juan, March 2. Sec., Dr. O. Costa Mandry, Box 536, San Juan.

RHODE ISLAND: Providence, Jan. 7-8. Chief, Division of Examiners, Mr. Robert D. Wholey, 366 State Office Bldg., Providence.

SOUTH DAKOTA: Pierre, Jan. 19-20. Dir., Division of Medical Licensure, Dr. B. A. Dyar, Pierre.

VERMONT: Burlington, Feb. 10-12. Sec., Board of Medical Registration, Dr. W. Scott Nay, Underhill.

WASHINGTON: *Basic Science*. Seattle, Jan. 7-8. *Medical*. Seattle, Jan. 11-13. Dir., Department of Licenses, Mr. Harry C. Huse, Olympia.

WEST VIRGINIA: Charleston, March 1. Sec., Public Health Council, Dr. Arthur E. McClue, State Capitol, Charleston.

WISCONSIN: Madison, Jan. 12-14. Sec., Dr. Henry J. Gramling, 2203 S. Layton Blvd., Milwaukee.

WYOMING: Cheyenne, Feb. 1. Sec., Dr. G. M. Anderson, Capitol Bldg., Cheyenne.

#### NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II*. Feb. 9-11, May 10-12, June 21-23, and Sept. 13-15. *Part III*. New York, Jan. 11-13 and Chicago, Jan. 19-21. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

#### SPECIAL BOARDS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written examination for Group B applicants will be held in various cities throughout the country, April 17. Oral examinations for Group A and B applicants will be given in Philadelphia, June 7-8.* Sec., Dr. C. Guy Lane, 416 Marlborough St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written examination will be held simultaneously in different centers of the United States and Canada on December 14 and in March. Practical examination will be given in St. Louis in April and at Philadelphia in June.* Chairman, Dr. Walter L. Bierring, 406 Sixth Ave., Rm. 1210, Des Moines.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written examination for Group B applicants will be held in various cities throughout the United States and Canada, March 6. Practical, oral and clinical examinations for Group A and B applicants will be held at Atlantic City, N. J., June 7-8. Applications must be received at least sixty days prior to the examination dates.* Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).

AMERICAN BOARD OF OPHTHALMOLOGY: Los Angeles, Jan. 23. Sec., Dr. John Green, 3720 Washington Blvd., St. Louis, Mo.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Cleveland, Jan. 9. Sec., Dr. Fremont A. Chandler, 180 N. Michigan Ave., Chicago.



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LICENSED BY RECIPROCITY	
School	Year Grad. Reciprocity with
University of Arkansas School of Medicine.....(1929)	Arkansas
Emory University School of Medicine.....(1924)	Alabama
Indiana University School of Medicine.....(1926)	Indiana
University of Louisville School of Medicine.....(1929)	Kentucky
Tulane University of Louisiana School of Medicine.....(1925)	Texas
Minneapolis College of Physicians and Surgeons.....(1909)	Minnesota
Washington University School of Medicine.....(1930)	Louisiana, Missouri
Ohio State University College of Medicine.....(1930)	Ohio
Hahnemann Medical College and Hosp. of Philadelphia (1906)	Ohio
University of Tennessee College.....	Tennessee
Vanderbilt University School.....	Tennessee
Baylor University College of.....	Texas

\* License will be issued on completion of internship.

† Granted a temporary permit and will receive a license when United States citizenship is completed. Verification of graduation in process.

## Book Notices

**A Preface to Nervous Disease.** By Stanley Cobb, A.B., M.D., Bullard Professor of Neuropathology, Harvard Medical School. Cloth. Price, \$2.50. Pp. 173, with 13 illustrations. Baltimore: William Wood & Company, 1936.

This is an excellent treatise written by an able neuropsychiatrist, who briefly discusses facts and correlations that are necessary in order to understand the simpler workings of the central nervous system. Anatomic, physiologic and pathologic data are closely correlated and the reader gets only the known and proved facts. The book is divided into twelve chapters, the autonomic nervous system, the cerebrospinal nervous system, motor integration and locomotion, functional localization in the cerebral cortex, consciousness and the "mind-body" problem, the cerebral circulation, the cerebrospinal fluid, paths of infection to the nervous system, general histologic pathology, the peripheral nerves and neuritis, special histologic pathology, and epilepsy and the psychoses. The author illustrates the relationship between psychiatry and certain other sciences. Psychiatry is represented as a pyramid, its apex being philosophy and its base physics, chemistry and anatomy. Above the latter three named are physiology, neurology and experimental psychology. Between these and the apex (philosophy) there exists a space which at present is a void and which requires intensive research in the future in order that facts may be found to explain the observations and to support satisfactorily the theories now being discussed in psychiatry and psychology. The bibliography, unfortunately, is brief. The book is recommended to all neuropsychiatrists.

**Handbuch der experimentellen Pharmakologie.** Begründet von A. Heffter. Ergänzungswerk. Herausgegeben von W. Heubner, Professor der Pharmakologie an der Universität Berlin, und J. Schüller, Professor der Pharmakologie an der Universität Köln. Band II: Narkotika der Fettreihe. Von M. Kochmann. Paper. Price, 36 marks. Pp. 283, with 29 illustrations. Berlin: Julius Springer, 1936.

This supplement is intended to bring down to date the chapter on "Narcotics of the Fatty Series" of volume I of the "Handbuch der experimentellen Pharmakologie." Kochmann summarizes the present status of anesthetics as follows: Chloroform, on account of its intrinsic dangers, is being largely abandoned. Ether is preferred, but not by itself. It is used in combination with other narcotics ("mixed narcotics"). "Pre-narcosis" is the term to be applied to the use of a narcotic to make easier the induction of anesthesia, while a "basis narcotic" is one that carries the main burden of an anesthesia, to be completed by a more controllable anesthetic. Kochmann believes that ether as well as local anesthesia is likely to become largely displaced by the gases and by briefly acting intravenous anesthetics. There are intrinsic reasons why the gas anesthetics are safer than ether or chloroform. The latter must be administered at the beginning in toxic concentration, because of their slowness in inducing anesthesia. Gas anesthetics may be given in safe concentration from the beginning, because of the promptness with which they act. This is due to the relative insolubility of the gas, as compared with relative solubility of ether or chloroform. Narcosis occurs in spite of this relative insolubility because of the high partial pressure of the gas that can and must be maintained in the lungs. The highest gas concentration that can be maintained at atmospheric

pressure in the lungs with acetylene, ethylene or nitrous oxide is below the fatal limit. That is why they are so safe. It seems that ethylene is the preferred gas in America, while acetylene is preferred in Europe. The latter is much less expensive. There are other factors that make these gases safer. Postanesthetic bronchopneumonia raises the ether or chloroform mortality rate to from 3 to 5 per thousand. The explosion mortality rate of ethylene can be reduced to 1 per hundred thousand, while postanesthesia complications are absent. An experimentally demonstrable therapeutic potentiation occurs with barbiturate basis narcotics and the inhalation anesthetics, as well as between barbiturates and the local anesthetics. The author discusses Cloetta's demonstration of a "sleep steering center," located in the base of the brain and in front of the aqueduct of Sylvius, which induces sleep under the influence of calcium excess and wakefulness under the action of potassium excess, the calcium lessening cell permeability while potassium increases it. A sensitization of the center to the calcium action is required for the production of sleep, and this occurs through modification of the center to favor calcium accumulation, which is affected by fatigue products as well as by hypnotics. These examples might suffice to give some indication of the wealth of new material contained in this supplement.

**A Text-Book of Histology Arranged upon an Embryological Basis.** By J. Lewis Bremer, M.D., Hersey Professor of Anatomy, Harvard University. Fifth edition of "Lewis and Stöhr." Fabrikoid. Price, \$6.50. Pp. 580, with 455 illustrations. Philadelphia: P. Blakiston's Son & Co., Inc., 1936.

Much of the modern histologic investigation consists of attempts to correlate cellular structure and function. The vast amount of work in the fields of endocrinology and of secretions of glands in general, the influence of recent experimental embryology, and the introduction of new experimental methods in histology have all served to move histology from the static, purely descriptive position which it occupied for many years to a place among the most active and progressive of the medical sciences. This change in the scope of histology is reflected in the present extensive revision of this well known book. Although it still presents histology primarily from the embryologic point of view, this edition differs from previous ones in containing much physiologic information. The most extensive changes and additions are in the descriptions of the endocrine glands, the kidneys, the teeth, and blood formation. There are many new illustrations. The photomicrographs of dental structure are particularly demonstrative. Controversial matter has been presented in such a fashion that the opposing views are readily grasped by the student. Perhaps the main unfavorable criticism which might be directed toward it is that it is slightly oversimplified; and oversimplification, of necessity, often leads to slight inaccuracies. Of this the author was obviously aware, for he has sought to overcome this deficiency by the incorporation of many new references, which were selected to a large extent on the basis of availability to American medical students. As the author states in the preface, "even slight familiarity with the literature will disclose the active vitality of modern anatomical science." With this revision Professor Bremer has succeeded in making his book a clear presentation of modern histology for medical students.

**Investigations on Respiratory Dust Disease in Operatives in the Cotton Industry.** By C. Prausnitz. Medical Research Council, Special Report Series. No. 212. Paper. Price, 2s. 6d. Pp. 73, with 26 illustrations. London: His Majesty's Stationery Office, 1936.

A few decades ago the terms "byssinosis" and "byssophthisis" found their way with fair frequency into discussions of dusty lung diseases. The concept then was that cotton dusts produce in workers a lung disease analogous to silicosis. Greater experience has proved that little is shared in common by cotton and silica dusts. Nevertheless, morbidity statistics continually present an abnormal incidence of pulmonary diseases among cotton workers. Tuberculosis, bronchitis and asthma stigmatize these mill workers. In the United States a satisfying but perhaps erroneous explanation was found in the cotton worker's low standards of living, his poor housing, low wages, fatigue producing work, and high humidity in work rooms. In England, physicians and hygienists have persisted in the belief that cotton dust itself or some component is the direct source of

"mill fever" and remotely the source of more severe disorders. At one time histamine, a constituent of cotton dust, was marked with suspicion as the cause of mill workers' lung diseases. In fact, histamine may play some part but is not the exclusive agent responsible. This English book provides an admirable presentation of the entire problem of respiratory disease among cotton operatives. The chief new material deals with extensive experiments on man and animals applying various extractives of cotton. In the protein fraction there has been found a substance believed to be the specific cause of mill intoxications. This substance acts chiefly as a sensitizing agent but in addition appears to possess direct irritant properties so that, even in the absence of allergic states, damage may arise. Injury from cotton dust is reported as not limited to the respiratory tract. Marked changes are reported as occurring in the adrenals. The contents of this small book are presented in four major divisions, on the chemistry and physics of cotton dust, experimental investigations, clinical and physiologic observations and diagnosis, treatment and prevention. In the last section it is recorded that desensitization is not effective at this time and that no treatment is of specific worth. Stress is placed on the prevention of these diseases through the elimination of dust in the cotton mill atmosphere. Since American cotton proved to contain just as much toxic material as batches from other portions of the world, no reason prompts the belief that American operatives may be free from this occupational disorder. This book should become the possession of physicians working in the cotton textile areas of this country, as well as industrial physicians and hygienists everywhere.

**Gynecology for Nurses.** By Harry Sturgeon Crossen, M.D., Gynecologist to Barnes Hospital, St. Louis Maternity Hospital, and St. Luke's Hospital, and Robert James Crossen, M.D., Instructor in Clinical Gynecology and Obstetrics, Washington University School of Medicine. Second edition. Cloth. Price, \$2.50. Pp. 316, with 365 illustrations. St. Louis: C. V. Mosby Company, 1936.

The excellent features of the first edition, namely, good illustrations, careful proportion of subject matter, simple exposition, and minute attention to details, are embodied in the second edition of this manual, which has now been brought down to date by the inclusion of sections on endocrinology and references to newer therapeutic measures, such as the Elliott treatment. The aim of the work is to provide the student nurse, the supervising nurse, the operating room nurse or the office nurse with sufficient knowledge of gynecology for the proper understanding of her work and, further, to provide her with detailed instruction in gynecologic nursing technic. This design has been admirably fulfilled. The personal views of the authors, which are of especial interest to the experienced surgeon or nurse, may limit somewhat the general acceptance of the volume as a textbook, since every hospital is inclined to teach its student nurses its own technic. Nevertheless, supervisors of nurses and private duty nurses will find the book of great reference value. Those accustomed to the authors' style will not think the new volume poorly written.

**Alimentación de niños. Métodos de México.** Por el Dr. Juan M. González. Cloth. Pp. 718, with illustrations. Mexico, D. F.: The Author, 1936.

This book, in Spanish, is on the methods used in feeding Mexican infants. The first 170 pages deals with the weight and body measurements of Mexican children, breast feeding and the feeding of premature infants. The average Mexican child weighs 3,300 Gm. at birth and is 51 cm. long. It weighs 7,200 Gm. at 6 months and 9,350 Gm. at 1 year. It can therefore be seen that, whatever their type of feeding may be, these infants quite compare in body build with infants in this country. Breast feeding is advocated, and considerable space is given to reasons and to technic. The author prefers a three hour interval, but only five feedings in twenty-four hours. Much attention is given to manual expression and the Abt pump. His regimen for premature infants is quite like ours, and he advocates breast milk for their feeding.

The second part of the book deals with artificial foods. Cow's milk is preferred. The Holando-Mexican breed of cattle produces the best milk for infant feeding, as the fat globule is almost the same size as human milk. Milk should be pasteurized or home boiled. Next in preference are acid milks or banana milk (made by emulsifying a ripe banana in 0.5 liter of milk). Vitamin C is furnished in fruits, and sunshine gives

vitamin D. The other vitamins the author states are furnished in the ordinary diet. The fortunate Mexican mother therefore does not have to listen to vitamin propaganda.

Probably the most interesting section of the book is that dealing with artificial feeding. The artificially fed baby receives seven milk feedings a day until 3 months of age and six feedings a day to 10 months. Cooked apple is added at 7 months and banana and other fruits and vegetables at from 7 to 10 months. At 1 year the Mexican baby has four milk feedings, fruit, vegetable and egg yolk. Bread is added at 18 months, and at 2 years a soup made of meat and egg. The preschool child has four meals a day of milk, soup, egg, meat, bread, vegetable and corn meal pancake. These meals are at 8, 12, 4 and 7 o'clock.

The final part discusses digestive disturbances. Finkelstein's classification is used, and the treatment is quite like ours. Chapters are devoted to intravenous dextrose therapy and blood transfusions.

The book is well written and intensely interesting. The physician who wishes to learn of the feeding methods used in other countries will profit by reading this. It is so beautifully done and so profusely illustrated that the fact that it is written in Spanish should be no handicap.

**Principles and Practice of Recreational Therapy for the Mentally Ill.** By John Elsie Davis, B.A., M.A., Senior Physical Director, Veterans Administration Facility, Perry Point, Maryland. In collaboration with Dr. William Rush Dunton, Jr., Instructor in Psychiatry, The Johns Hopkins University. Cloth. Price, \$3. Pp. 206. New York: A. S. Barnes & Company, Incorporated, 1936.

Organized recreation in hospitals for mental disease, used as a form of occupational therapy, is of comparatively recent development. The book at hand appears to be the first of its type and as such is of great interest to all physicians who care for patients with psychoses in hospitals. After an introductory chapter listing the various types of disease usually found in such hospitals, details of recreational activities are given which appear to the author to be best suited for patients with such diseases as dementia praecox, encephalitis and paranoia. It is too early to evaluate the effect of such recreational exercises and this the author does not attempt to do. In the final chapter he outlines the aims and objectives of his work, which was largely accomplished in a hospital under the Veterans' Administration. Only when other hospitals have adopted similar programs can the value of this work be estimated. This book, extremely well written, will serve as a basis for the instigation of similar programs in other hospitals.

**Reports on Chronic Rheumatic Diseases. Being the Annual Report of the British Committee on Chronic Rheumatic Diseases Appointed by the Royal College of Physicians.** Edited by C. W. Buckley, M.D., F.R.C.P. Number Two. Cloth. Price, \$3.50; 10s. 6d. Pp. 140. New York: Macmillan Company; London: H. K. Lewis & Co., Ltd., 1936.

While the title of this book might lead one to believe that it represents the prevailing opinion of the British Committee on Chronic Rheumatic Diseases, the editor frankly states that "it is not to be assumed that the views expressed . . . are necessarily the views of the British Committee. Their object is to present accounts of clinical and laboratory observation and research which they believe to be of real value, but beyond this, they do not desire to hamper contributors in the expression of their opinions." The volume consists of ten articles by physicians whose names have been identified for a long time with the study of the rheumatism problem. One of the articles giving an excellent cross section of the American concept of the problem was written by Dr. Philip S. Hench of Rochester, Minn. The other nine articles were written by British physicians. The book should appeal particularly to the rapidly increasing group of physicians who are interested in the subject of arthritis. While no specific advance in the knowledge of the disease or its treatment can be gained from reading the book, it contains a wealth of thought-provoking material which in time may be translated into definite progress. The liberal attitude of the committee toward tenable but unproved theories is to be commended and is in line with the thought with reference to arthritis recently expressed editorially in *THE JOURNAL*; namely, "The only advance has been in the tolerance of most writers for the views of others; this open-mindedness in a field in which nobody knows much is a necessary prerequisite to the acquirement of knowledge."

**Orthopedic Surgery.** By Walter Mercer, M.B., Ch.B., F.R.C.S., Assistant Surgeon, Royal Infirmary, Edinburgh. With a foreword by John Fraser, M.C., M.D., Ch.M., Regius Professor of Clinical Surgery in the University of Edinburgh. Second edition. Cloth. Price, \$10. Pp. 906, with 408 illustrations. Baltimore: William Wood & Company, 1936.

The first edition was reviewed in *THE JOURNAL* Sept. 2, 1933. It was pointed out that the book was an outgrowth of the author's lectures in clinics given under the direction of Professor Fraser and that it reflected the general surgical rather than the orthopedic point of view. In the present edition the author claims to have benefited by the criticisms with which his first edition was received. He has added the more important developments in orthopedic surgery that have appeared since 1933. Several of the sections have been rewritten, including those on pneumococcic arthritis, gonococcic arthritis, hemophilic arthritis, hysterical joints and the muscular dystrophies. There are two new chapters on circulatory disturbances of the extremities and on manipulative surgery. All these additions resulted in 200 additional pages and thirty-seven additional illustrations. Most of the illustrations in the present edition are instructive. However, they would be more instructive if the legends were more explanatory and if there were markings on the illustrations themselves to indicate to students just where the pathologic changes lie.

**Asthma: Aerodynamik und Therapie.** Von Dr. med. Otto Buslinger. Boards. Price, 3.50 Swiss francs; 2.80 marks. Pp. 68, with 10 illustrations. Berne: Medizinischer Verlag Hans Huber, 1936.

The author expounds his theory of distorted air currents created in the nasal passages as the important etiologic factor in bronchial asthma. He states that normally the middle meatus is the passage through which the main current of air reaches the trachea. The observations have been made by means of (1) direct rhinoscopy with tobacco smoke as a means of visualizing the air currents, (2) animal experiments, (3) the use of models of the human nose, and (4) technical apparatus and calculations. During the asthmatic attack the inferior meatus becomes the main passageway for the air currents, the latter becoming distorted and causing the asthmatic attack. The most important factor in the production of these distorted currents is the inferior turbinate, which becomes bulbous at both ends and constricted in the center. The author's therapy consists of flushing a warm solution of sodium, potassium and calcium salts in neutral solution against the inferior turbinate, the use of gargles, the internal use of calcium salts and expectorants. He advises against the local use of ephedrine and epinephrine. He limits his surgical procedures to the removal of redundant mucosa occasionally found posteriorly on the inferior turbinate, the careful removal of polyps, occasionally submucous needling of the inferior turbinate, and occasionally a submucous septum resection. The cases presented are few and hastily sketched. He takes much for granted and in places his ideas are quite fantastic.

**Die Bekämpfung der eklampischen Schwangerschaftserkrankungen.** Von Dozent Dr. med. Heinrich Sledentopf, Oberarzt der Universitäts-Frauenklinik zu Leipzig. Paper. Price, 4.50 marks. Pp. 86. Leipzig: Johann Ambrosius Barth, 1936.

In this small monograph the author reviews briefly the present treatment of eclampsia. In that the cause of this obstetric complication is not known, he evaluates the various therapeutic measures that have been used in the large clinics of the world. The prophylactic treatment of eclampsia is probably the most important measure in the therapy of the disease. To this end, good antepartum care is necessary. He thus makes a plea for the widespread use of antepartum care in all obstetric patients.

The author concludes from statistics from his own clinic in Leipzig, as well as from many other representative clinics, that certain principles stand out in the treatment of eclampsia. The disease should be treated in the preeclamptic stage by rest, sedatives and concentrated dextrose solutions and, if the condition fails to improve, the termination of pregnancy is advocated. This can usually be done by the mechanical induction of labor, although cesarean section is occasionally advisable. In the convulsive stage, delivery from below is rarely indicated. Local anesthesia should be used. The residual damage following preeclampsia and eclampsia is properly emphasized. Future pregnancies may be complicated by abortion, stillbirth or abruptio placentae. These sequelae reduce the number of future

offspring. The possible decrease in the number of conceptions following toxemias is questionable and theoretical. The high fetal mortality in the toxemias of pregnancy is pointed out. Antepartum care and the general plan for the treatment of the toxemias of pregnancy presented in this book have been in use in most of the large American clinics for many years.

**Operative and Interpretive Radiodontia: A Textbook for Students and Practitioners of Dentistry.** By Walter S. Thompson, D.D.S., Associate Professor of Radiodontia, College of Dentistry, University of Southern California. Cloth. Price, \$7. Pp. 374, with 355 illustrations. Philadelphia: Lea & Febiger, 1936.

Intended essentially for dental students and dentists, this volume holds interest also for physicians, particularly roentgenologists. It presents a survey of the principles and practices of dental roentgenography, with particular attention to the mechanical or technical phases of this method. The introductory chapters on the history, the fundamental principles and the dental application of the x-rays are admirably suited to the readers for whom the book was written. The mechanics and technic of radiodontia are presented with exacting, at times redundant, detail. To the dental practitioner this, no doubt, is of great value. Unfortunately there is a corresponding lack of detail in the discussion of the interpretation of the roentgenograms. Only twenty-five pages is devoted to specific diagnosis, and this is presented largely by illustrations of typical roentgenograms of various disease conditions of the mouth and jaws. While the general principles of diagnosis are stressed, there is no effort to detail the points on which specific diagnoses are based or to present any real differential diagnosis. As an introduction to dental roentgenography and as a manual of technic the book is admirable, but it fails to provide an adequate treatment of interpretative radiodontia.

**Amino Acid and Ammonia Metabolism in Liver Diseases.** By Esben Kirk. Paper. Price, 10 Danish kroner. Pp. 147. Copenhagen: Levin & Munksgaard, 1936.

It is shown from the literature and new experiments that the liver is the exclusive site of urea formation and the chief site for the deamination of amino acids. But a small amount of liver tissue is adequate, so that in cirrhosis of the liver and feeding ammonia, although high blood ammonia values were observed in eighty-two cases, it does not indicate any inadequacy of the liver but may be due to an anastomosis between the portal vein and the vena cava. In acute hepatitis and obstructive jaundice and some other liver diseases there was no abnormal increase in blood ammonia on the feeding of ammonia. Folin's colorimetric method for amino nitrogen determination was shown to give very low values and therefore was discarded. After ingestion of 25 Gm. of aminoacetic acid, amino nitrogen was determined in the blood plasma by the Van Slyke method in twenty-two normal subjects, fifteen cases of acute hepatitis, thirteen of liver cirrhosis and eight of obstructive jaundice. Some variations were observed but were ascribed to retarded absorption of amino acids. In liver disease the fasting amino nitrogen values were found to be within the normal range. Similar results were found with relation to amino nitrogen excretion in the urine, where the determination was made by the modified formol titration. It is suggested that blood ammonia determinations are useful in the diagnosis of cirrhosis of the liver.

**Psychology of Sex: A Manual for Students.** By Havelock Ellis. Cloth. Price, \$3. Pp. 377. New York: Emerson Books, Inc., 1935.

The author of this volume is also the author of a seven-volume series called "Studies of the Psychology of Sex." His extensive work is more particularly suited to the use of physicians, psychologists, and those whose professional lives are greatly concerned with the problems considered. The present volume is more nearly a manual for the general student. It sets forth the view of the author that there is no sharp boundary line between normal and abnormal in sex matters. It provides a concise consideration of such topics as sexual deviations, homosexuality, marriage, the art of love, and the dynamic nature of the sex impulse. For the general reader the book is an adequate presentation of the Havelock Ellis views. It makes clear many subjects which have formerly been considered well concerned in mystery. There is an inefficient glossary and a fairly good index.

**Syndromes myo-parathyroïdiens simples ou associés.** (Myopathies scléreuses et scléro-hypertrophiques liées à des troubles parathyroïdiens.) Par André Percola. Paper. Pp. 88, with 10 illustrations. Paris: Librairie Le François, 1936.

The purpose of this monograph is to prove the relationship between parathyroid disturbances and atrophic myotonia. The author reports in detail seven clinical histories, with some laboratory data as a basis for his contention that these muscular dystrophies are secondary to parathyroid disturbances, supporting the thesis further by some sketchy quotations from the literature. The bibliography is composed of standard references, but some of the best work in this field has been omitted. While the book is interesting and informative in that it records some clinical observations, one is not impressed with the proofs offered. The work is more speculative than inquiring but still is interesting to both the investigator and the specialist. Some of the illustrations are good, others poor, owing to imperfect reproduction.

## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Malpractice: Statute of Limitations as Discriminatory Against Osteopaths and Chiropractors.**—In South Dakota, an action against "a physician, surgeon, dentist, hospital or sanitarium for malpractice, error, mistake or failure to cure, whether based on contract or tort" must be brought within two years. The plaintiff sued the defendant, a physician, for malpractice and the lower court held that the action was barred by the two year statute of limitations. The plaintiff appealed to the Supreme Court of South Dakota, contending that the statute was unconstitutional in that it placed physicians and the other named groups in a privileged class and was therefore discriminatory against osteopaths, optometrists, chiropractors, nurses and midwives.

If, said the Supreme Court, the statute does discriminate in favor of physicians and against chiropractors, osteopaths or the other classes referred to by the plaintiff, it is no concern of the plaintiff. He has not brought himself within any of the classes which he alleges are discriminated against and cannot, therefore, raise the question of discrimination against such classes. There was no contention that the statutory two-year period was unreasonable. Furthermore, the statute applies equally to any one having an action against those enumerated therein and the plaintiff was placed in the same position as any other person having a claim against those specified in the statute. The judgment for the defendant was consequently affirmed.—*Petersen v. Holif (S. D.)*, 266 N. W. 252.

**Workmen's Compensation Acts: Death from Diabetes Aggravated by Trauma.**—The worker had diabetes, which had been kept under control for over five years by diet and insulin. In the course of his employment, a truck ran over his right foot and leg, spraining the ankle and inflicting a cut of about 1½ inches in length and going to the bone. He continued to work that day and part of the next day but was unable to work thereafter. The lacerated wound on his leg became infected, the diabetic condition grew worse and twenty-five days after the accident the worker died of "acidosis due to diabetes." His widow, in proceedings under the Missouri workmen's compensation act, was awarded compensation and from a judgment of the circuit court, Jackson county, affirming that award, the employer appealed to the Kansas City court of appeals.

The employer contended that there was no causal connection between the worker's injury and his death. The court of appeals, however, did not agree with that contention. The evidence clearly showed, said the court, that the diabetic condition of the worker was under control prior to the industrial accident, that that control was disturbed because of the infection in the leg, and that it became impossible to reestablish it. As a consequence, the diabetic condition became aggravated and death resulted. Two physicians who attended the worker testified that they made strenuous efforts to reestablish the

"balance" in the sugar content of the worker's blood but were unable to do so because of the presence of the infection. Each of these physicians testified that the injury and the resulting infection directly contributed to his death. If, said the court, the industrial accident was a contributing factor to death, it must have been, to the extent it contributed, the cause of death, even if there were other contributing factors or causes. The fact that the worker had diabetes which contributed to his death constitutes no bar, the court said, to the widow's right to compensation, even though without diabetes the injury sustained by the accident would not have been fatal. As was said by the court in *Harder v. Thrift Construction Co. (Mo. App.)* 53 S. W. (2d) 34, at page 37:

Generally speaking, the rule is that the act [the workmen's compensation act] contemplates latent or dormant ailments; that the existence of a disease which does not impair the employee's ability to work will not prevent a recovery if the accidental injury accelerates or aggravates such disease to a degree of disability or of death; and that an actual aggravation of an existing infirmity caused by accident arising out of and in the course of the employment is compensable, even though the particular accident would have produced no such result in the case of a normal and healthy individual.

The court of appeals accordingly affirmed the judgment of the circuit court upholding the award of compensation.—*Tralle v. Chevrolet Motor Co. (Mo.)*, 92 S. W. (2d) 966.

**Accident Insurance: Right to Benefits as Affected by Refusal to Submit to Surgical Operation.**—The defendant insurance company promised to pay Sanders certain monthly benefits if he became totally and permanently disabled. Subsequently benefits were paid him when he became totally and permanently disabled because of "fistula and other ailments." Some time later his attending physician recommended that his teeth be extracted, that his tonsils be removed and that he "undergo a surgical operation for fistula." On Sanders' refusal to submit to the suggested procedures, the defendant insurance company declined to make further payments under the policy. He then instituted the present action and recovered judgment, the insurance company appealing to the Supreme Court of Arkansas, contending that Sanders' refusal to submit to the suggested operations relieved it of further liability.

A person is not required, said the Supreme Court, to undergo a major surgical operation against his will for the purpose of freeing another from consequent damages. Even a simple minor surgical operation may be compelled only where a reasonably prudent person would submit thereto. In determining what constitutes reasonable or unreasonable refusal to submit to surgical operations to correct total and permanent disability each case must, of necessity, rest on its peculiar facts and circumstances, and when a jury, as in the present case, has determined this issue on conflicting evidence, its finding is conclusive on appeal.

The Supreme Court accordingly affirmed the judgment in favor of Sanders.—*Aetna Life Ins. Co. v. Sanders (Ark.)*, 93 S. W. (2d) 141.

## Society Proceedings

### COMING MEETINGS

- American Academy of Orthopedic Surgeons, Cleveland, Jan. 11-13. Dr. Philip Lewin, 55 East Washington St., Chicago, Secretary.
- Eastern Section, American Laryngological, Rhinological and Otolological Society, Boston, Jan. 7. Dr. D. C. Jarvis, Quarry Bank Bldg., Barre, Vt., Chairman.
- Middle Section, American Laryngological, Rhinological and Otolological Society, Chicago, Jan. 11. Dr. Alfred Lewy, 25 East Washington St., Chicago, Chairman.
- Mid-Western Section, American Laryngological, Rhinological and Otolological Society, Chicago, Jan. 11. Dr. Frederick A. Figi, 436 Tenth Ave., S.W., Rochester, Minn., Chairman.
- Puerto Rico, Medical Association of, San Juan, Dec. 18-20. Dr. Dolores M. Pinero, Ave. Fernandez Juncos, Parada, 19, Santurce, Secretary.
- Society of American Bacteriologists, Indianapolis, Dec. 28-30. Dr. I. L. Baldwin, College of Agriculture, University of Wisconsin, Madison, Wis., Secretary.
- Society of Surgeons of New Jersey, Newark, Jan. 6. Dr. Walter B. Mount, 21 Plymouth St., Montclair, Secretary.
- Southern Section, American Laryngological, Rhinological and Otolological Society, Memphis, Tenn., Jan. 13. Dr. Charles D. Blassingame, Physicians and Surgeons Bldg., Memphis, Tenn., Chairman.
- Western Section, American Laryngological, Rhinological and Otolological Society, San Diego, Calif., Jan. 30-31. Dr. David R. Higbee, 3245 Fourth Ave., San Diego, Calif., Chairman.

# Current Medical Literature

## AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers in continental United States and Canada for a period of three days. Periodicals are available from 1926 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them. Titles marked with an asterisk (\*) are abstracted below.

### American Heart Journal, St. Louis

12: 257-382 (Sept.) 1936

- \*Use of Circulatory Measurements in Evaluating Pulmonary and Cardiac Factors in Chronic Lung Disorders. B. S. Oppenheimer and W. M. Hitzig, New York.—p. 257.
- Transient Auricular Fibrillation as Toxic Manifestation of Digitalis. C. L. Tung, Peiping, China.—p. 272.
- Effect of Stellate Ganglionectomy on Cardiac Function of Intact Dogs and Its Effect on Extent of Myocardial Infarction and on Cardiac Function Following Coronary Artery Occlusion. W. V. Cox, Lewiston, Maine, and H. F. Robertson, Toronto.—p. 285.
- Experimental Extrasystoles Elicited Through Artificial Stimulation of Endocardium of Dog. I. Marcu, Bucharest, Rumania.—p. 301.
- Study of Esophageal Lead in Clinical Electrocardiography: Part II. Electrocardiographic Study of Auricular Disorders in Human Subject by Means of Esophageal Lead. W. H. Brown, Toronto.—p. 307.
- Unusual Features of Two Cases of Sino-Auricular Block. I. de Zarday, Budapest, Hungary.—p. 339.
- Electrocardiographic Changes in Hyperparathyroidism. F. Kellogg and W. J. Kerr, San Francisco.—p. 346.

**Pulmonary and Cardiac Factors in Lung Disorders.**—Oppenheimer and Hitzig studied fifty-four cases of bronchogenic (obstructive) emphysema and sixteen cases of bronchial asthma. The circulatory measurements employed were initial venous pressure, the rise of venous pressure during right upper abdominal quadrant compression, the arm-to-lung time (ether), the arm-to-tongue time (saccharin or sodium dehydrocholate) and the lung-to-tongue time (saccharin time minus ether time). Uncomplicated pulmonary insufficiency is usually attended by normal circulatory measurements. The presence of abnormal circulatory measurements indicates that pulmonary insufficiency is complicated by myocardial failure. Incipient isolated right heart failure is characterized by the presence of a normal initial venous pressure, and a varying rise in this pressure during right upper quadrant compression. The arm-to-lung time may or may not be prolonged, and the lung-to-tongue time is normal. Frank isolated right heart failure is characterized by high initial venous pressure, considerable rise on right upper quadrant compression, prolongation of the arm-to-lung time and a relatively normal lung-to-tongue time. Left heart failure is characterized by normal initial venous pressure with or without a rise on right upper quadrant compression, a normal or slightly prolonged arm-to-lung time, and a considerably prolonged lung-to-tongue time. Universal heart failure is characterized by high initial venous pressure, with a considerable rise in right upper quadrant compression and prolongation of the arm-to-lung time and lung-to-tongue time. Bronchial asthma with a few exceptions is characterized by normal initial venous pressure, absence of a rise of right upper quadrant pressure, and normal or fast normal circulation times. Cardiac asthma is differentiated from bronchial asthma by the presence of abnormal circulatory measurements. That incipient right heart failure also frequently accompanies left ventricular failure may be demonstrated by the method of compressing the right upper quadrant of the abdomen and observing the presence of a rise in the normal initial venous pressure level. In chronic bronchopulmonary disease there is apparently no parallelism between the severity of the clinical symptoms and the slowing of the pulmonary blood flow.

12: 383-510 (Oct.) 1936

- Thorotrast Arteriography of Extremities: Report of Illustrative and Unusual Cases. W. M. Yater, Washington, D. C.—p. 383.
- Theoretical Considerations Regarding Variations of RST Segment and Subsequent T Wave Following Local Ventricular Trauma. N. M. Fenichel, C. Shookhoff and D. I. Abramson, Brooklyn.—p. 406.
- Application of Roentgenkymography to Study of Normal and Abnormal Cardiac Physiology. I. S. Hirsch and R. Gubner, New York.—p. 413.

- \*Relationship of Tachycardia to Cardiac Insufficiency. D. Luten, St. Louis.—p. 435.
- Differential Diagnosis of Congestive Heart Failure and Constrictive Pericarditis (Pick's Disease). H. B. Sprague, Boston.—p. 443.
- Case of Congenital Aortic Atresia with Hypoplasia of Ascending Aorta, Normal Origin of Coronary Arteries, Left Ventricular Hypoplasia and Mitral Stenosis. J. T. Roberts, New Orleans.—p. 448.
- \*Sudden Arterial Occlusion in Thrombo-Angiitis Obliterans. W. Kvale and E. V. Allen, Rochester, Minn.—p. 458.

**Relation of Tachycardia to Cardiac Insufficiency.**—Luten asserts that the various elements of the circulation are subject to reflex variation. By reciprocal adjustments, balance tends to be maintained despite disorder in one component. Primary impairment of the peripheral circulation or of cardiac output produces reflex acceleration of the sinus heart rate. Compensatory tachycardia is physiologic, not harmful. Its primary abatement is not a proper therapeutic objective. Improvement is followed by reverse slowing. Conversely, primary acceleration of rate tends to induce compensatory adjustment in blood pressure and in systolic discharge. With sinus rates nearly as high as 200, the circulation remains adequate. In auricular fibrillation the ventricular rate appears to depend largely on the state of the ventricular muscle. This arrhythmia frequently occurs in congestive heart failure. Under such circumstances reduction in rate follows improvement in the muscle, from digitalis or from other cause. In cases of fibrillation without heart failure the muscular effect of digitalis is not beneficial; in such instances, administration of the drug is not followed by slowing. In auricular fibrillation, as in normal rhythm, abatement of tachycardia appears not to be the cause of improvement but to be the result of it.

**Sudden Arterial Occlusion in Thrombo-Angiitis Obliterans.**—Kvale and Allen reviewed the records of 255 carefully studied cases of thrombo-angiitis obliterans. Arterial thrombosis, as a primary clinical manifestation of thrombo-angiitis obliterans, occurred suddenly in eleven of their 255 cases. None of the patients were under their observation at the time occlusion occurred. Amputation was eventually necessary in two cases. Arterial thrombosis may occur suddenly in the course of well developed thrombo-angiitis obliterans and did in fifteen. Only two of the fifteen patients were under the authors' observation at the time occlusion occurred. Amputation of a leg was subsequently necessary in ten cases. Treatment, which should be begun promptly, consists of relief of pain, avoidance of burning the limb and the relief of arterial spasm, or the induction of vasodilatation, by means of drugs, intermittent negative and positive pressure, artificially induced fever or anesthesia.

### American Journal of Cancer, New York

28: 1-232 (Sept.) 1936

- Metastases of Intracranial Tumors. A. A. Nelson, Minneapolis.—p. 1.
- Hypernephroma and Spindle Cell Sarcoma of Kidney. M. M. Bracken, Toronto.—p. 13.
- Vaginal Metastases from Hypernephroma: Report of Four Cases. J. G. Sharnoff and A. M. Sala, New York.—p. 20.
- Factors in Cause of Death in Carcinoma of Cervix: Study of Fifty-Seven Cases Coming to Necropsy. B. Pearson, Minneapolis.—p. 31.
- \*Life Expectancy and Incidence of Malignant Disease: I. Carcinoma of Breast. I. T. Nathanson and C. E. Welch, Boston.—p. 40.
- Neoplastic Diseases Produced in Mice by General Irradiation with X-Rays: I. Incidence and Types of Neoplasms. J. Furth and O. B. Furth, New York.—p. 54.
- Id.: II. Ovarian Tumors and Associated Lesions. J. Furth and J. S. Butterworth, New York.—p. 66.
- Coal Smoke Soot and Tumors of Lung in Mice. M. G. Seelig and E. L. Benignus, St. Louis.—p. 96.
- Successful Transplantation of Hepatoma in Mice. L. C. Strong and G. M. Smith, New Haven, Conn.—p. 112.
- Further Consideration of Growth Rates of Tar Warts in Mice and of Their Autografts. J. C. Mottram, London, England.—p. 115.
- Studies on Concomitant Immunity. J. J. Bittner, Bar Harbor, Maine.—p. 121.
- Metastatic Gingival Adenocarcinoma from Primary Lesion of Colon. A. A. Humphrey and N. H. Amos, Battle Creek, Mich.—p. 128.
- Rhabdomyosarcoma of Testis: Report of Two Cases. A. J. Hertzog, Minneapolis.—p. 131.
- Benign Tumors of Stomach. J. F. Minnes and C. F. Geschickter, Baltimore.—p. 136.

**Life Expectancy in Malignant Disease.**—Nathanson and Welch calculated the life expectancy in 1,565 treated cases of carcinoma of the breast observed in the Huntington Memorial and Pondville hospitals. The age and sex incidence in 2,190

cases of cancer of the breast seen in the same institutions have been determined. The average length of life from onset of the disease is 3.5 years in patients treated in the years 1912 to 1932, compared with 2.5 years in those untreated. There is no absolute proof from these data that the treatment of carcinoma of the breast has increased the life expectancy significantly in the years 1923 to 1932 compared with that of the years 1912 to 1922. The Huntington group shows a definite improvement in the second decade, but this is probably due to a more favorable group of cases. The median length of life in the age group less than 40 is about three years, from 40 to 60 about three and a half years, and about four years thereafter. Cancer of the breast in the hospital cases is more malignant in the young and less so in the old. Men seem to have a slightly better life expectancy than women, but the number of male cases is too small for positive conclusions. Susceptibility to cancer of the breast increases steadily with age.

### American Journal of Medical Sciences, Philadelphia

192: 445-588 (Oct.) 1936

- Purpura Haemorrhagica with Lymphocytosis: Acute Type and Intermittent Menstrual Type. G. R. Minot, Boston.—p. 445.
- Quantitative Variations in Hemacytologic Constitution of Healthy Men and Rabbits. P. D. Rosahn and A. E. Casey, New York.—p. 456.
- Reaction Following Intra-group Blood Transfusion: Irregular Agglutinin Demonstrated by Sensitive Centrifuge Test Method. C. G. Culbertson and A. W. Ratcliffe, Indianapolis.—p. 471.
- \*Splenectomy in Treatment of Subacute Bacterial Endocarditis. D. Riesman, J. A. Kolmer, Philadelphia, and D. Polowe, Paterson, N. J.—p. 475.
- Gout: A Forgotten Disease. W. W. Herrick and T. L. Tyson, New York.—p. 483.
- Gout. A. Cohen, Philadelphia.—p. 488.
- Fatal Case of Bacillus Friedländer Abscess of Prostate. J. Tenenbaum and J. M. Ravid, Brooklyn.—p. 494.
- Treatment of Gonorrheal Arthritis with Artificial Fever. R. M. Stecher and W. M. Solomon, Cleveland.—p. 497.
- Effect of Intravenous Injections of Sucrose Solution (50 per Cent) on Cerebrospinal Fluid Pressure, Blood Pressure and Clinical Course in Cases of Chronic Hypertension. F. D. Murphy, R. A. Hershsberg and A. M. Katz, Milwaukee.—p. 510.
- Cerebral Degeneration with Encephalographic Study Eight Years After Common Carotid Ligation: Case. H. Worts, New York.—p. 517.
- Effect of Injection of Certain Nitrogen-Containing Compounds into Cisterna Magna on Blood Pressure of Dogs. H. Resnik Jr. and M. F. Mason, Nashville, Tenn.—p. 520.
- \*Blood Phosphatase as an Aid in Differential Diagnosis of Jaundice. M. M. Rothman, D. R. Meranze and T. Meranze, Philadelphia.—p. 526.
- Comparative Advantages and Further Modification of Bilirubin Excretion Test for Hepatic Function. L. J. Soffer and M. Paulson, Baltimore.—p. 535.
- Hepatic Infarction in Myelogenous Leukemia and Periarthritis Nodosa. D. R. Morgan, M. M. Lieber and H. L. Stewart, Philadelphia.—p. 540.
- Effect of Oil of Wintergreen on Incidence of Spontaneous Carcinoma in Mice: IV. Effect on Growth Rate and Survival Time After Onset of Malignancy. L. C. Strong, New Haven, Conn.—p. 546.
- Chronic Dysentery, Distal Ileitis and Ulcerative Colitis: Follow Up of Jersey City Epidemic of Bacillary Dysentery. J. Felsen, New York, and H. Gorenberg, Jersey City, N. J.—p. 553.
- Appearance of Electrocardiogram in Relation to Position of Heart Within Chest. L. N. Katz and M. Robinow, Chicago.—p. 556.
- Physiologic Effects of Benzedrine and Its Relationship to Other Drugs Affecting Autonomic Nervous System. A. Myerson, J. Loman and W. Dameshek, Mattapan, Mass.—p. 560.

**Splenectomy in Treatment of Subacute Bacterial Endocarditis.**—Riesman and his associates find that splenectomy for subacute bacterial endocarditis is well borne even in far advanced cases. It has not so far been followed by a permanent sterilization of the blood stream in cases in which blood stream infection has existed. Nevertheless, life is unquestionably prolonged and made more comfortable. The physical and psychic improvement is most impressive. Even if the infectious process should continue in the heart, and it is possible that even this might be favorably affected, it seems that the general condition of the patient is improved. Perhaps if the operation should be done earlier in patients with palpable spleens and hearts not too badly damaged, the results might be better. As death seems to be due in the majority of cases to embolism, the prevention of this complication should be taken into consideration. Treatment should not rest with splenectomy. Repeated small transfusions should be continued and bacteriophage therapy tried. Splenectomy may prove to be a method of dealing with intractable forms of sepsis without discoverable focus in which splenomegaly is a prominent feature. This

group, in which subacute bacterial endocarditis may be suspected but is unproved, at present promises the best results from the operation.

**Blood Phosphatase and the Diagnosis of Jaundice.**—Clinical data are presented by Rothman and the Meranzes to substantiate Roberts' original assertion concerning the clinical usefulness of phosphatase determinations in the differential diagnosis of jaundice. Attention is called to a number of instances in which the phosphatase values were greater than 10 units. They cannot, however, entirely agree with Roberts when he states that it is not necessary to know the concomitant serum bilirubin values in order to interpret the phosphatase readings. A comparison of the relative increase in the values of phosphatase and serum bilirubin above their respective normals gives additional aid in diagnosis and, in particular, makes possible a correct interpretation of those borderline values of 10 units or slightly above. The basis for this belief lies in the observation that in obstructive jaundice the rise in the phosphatase and serum bilirubin tends to run parallel until the limits of the phosphatase values are reached. In non-obstructive cases, on the other hand, in spite of the progressive increase in serum bilirubin, the phosphatase values rarely rise above 10 units and no parallelism is noted. Phosphatase determinations should be considered as representing a composite of effects, the dominant pathologic state exerting the greater influence on its value. The test can serve as a means of differentiating between the two classes of jaundice only in the absence of other conditions affecting phosphatase. The specific etiology must at present be inferred from other studies. In its ability to help differentiate between an obstructive and a nonobstructive jaundice, however, the phosphatase determination appears to be superior to other available tests, the galactose tolerance test in particular, when the latter is used to detect acute parenchymal liver disease. Too much reliance must not be placed on a single phosphatase determination. If, for example, a first estimation of phosphatase were to be made early in the onset of obstructive jaundice, as the jaundice is developing, it is conceivable that the phosphatase value, rising slowly in proportion, may not as yet have reached diagnostic heights. The low phosphatase value obtained under such conditions may be misleading.

### American J. Obstetrics and Gynecology, St. Louis

32: 547-726 (Oct.) 1936

- \*Anemia in Pregnancy. F. L. Adair, W. J. Dieckmann and K. Grant, Chicago.—p. 560.
- Further Study of Extraperitoneal Pelvic Conditions in Women. L. Brady, Baltimore.—p. 577.
- Relation of Endocrine System to Tumor Growth: Effect of Hypophysectomy and Pituitary Growth Hormone on Transplantable Rat Sarcoma. L. A. Emge and Kathleen M. Murphy, San Francisco.—p. 593.
- \*Estrogenic Substances in Blood of Women. C. F. Fluhmann, San Francisco.—p. 612.
- Total versus Subtotal Hysterectomy: Clinical and Technical Study. J. R. Goodall, Montreal.—p. 628.
- Total Hysterectomy by Abdominal versus Vaginal Route in Benign Uterine Disease. E. H. Richardson, Baltimore.—p. 641.
- Retropertoneal Pelvic Tumors Encountered by the Gynecologist. J. R. Miller, Hartford, Conn.—p. 652.
- Radium Irradiation for Benign Hemorrhage, with a Two to Twenty Year Review of 1,437 Cases. C. C. Norris and C. A. Behney, Philadelphia.—p. 661.
- \*Relation of Endometrial Hyperplasia to Adenocarcinoma of Uterus. E. Novak, Baltimore, and E. Yui, Shanghai, China.—p. 674.
- Secondary Sequels After Interposition of Uterus. W. T. Dannreuther, New York.—p. 699.
- Immediate Repair of Cervical Injuries. W. C. Danforth, Evanston, Ill.—p. 710.
- Relationship of Acanthosis Nigricans to Abdominal Malignancy: Report of Cases, Including One in Which Primary Growth Was in the Pelvis. J. C. Masson and H. Montgomery, Rochester, Minn.—p. 717.

**Anemia in Pregnancy.**—Adair and his collaborators illustrate the importance of the chemical determination of hemoglobin in pregnancy by stating that the test indicates that 63 per cent of pregnant women are anemic according to nonpregnant standards. Their data indicate that the concentration of hemoglobin, the cell volume and the erythrocyte count are definitely decreased during pregnancy and that the normal standards for the nonpregnant differ from those of the pregnant women. Statistically the minimal figures in normal pregnancy should be 10.16 for hemoglobin, 33.11 for cell volume and 3.36 for the erythrocyte count. The physiologic decrease and increase in

hemoglobin, cell volume and erythrocytes during pregnancy have not been evaluated properly. The fact that the hemoglobin concentration can increase 2, 3 or even 6 Gm. within four weeks without treatment at once casts doubt on any reports which state that improvement occurred during pregnancy when iron salts were administered. It is the authors' belief that the hemoglobin concentration of the cord blood is usually normal even though the mother has an anemia, but in a number of instances the hemoglobin concentration has been definitely below normal. This is especially important in view of the fact that milk contains little iron and, if the baby begins life with a low concentration of hemoglobin, anemia is quite likely to develop. This is still more important in premature infants, as they are born without the storage of iron in the liver which exists in the term baby. Severe anemia predisposes to premature delivery. Transfusion of blood, if properly supervised and if adequate amounts are given, has always been efficacious in raising the hemoglobin concentration and relieving all symptoms and signs of anemia. There was no case of premature labor. If the cause of the anemia occurring in pregnancy was merely a lack of iron in the diet, patients who receive iron should all show rapid improvement when adequate amounts of iron are added. The fact that a considerable number of patients show no improvement indicates that some other substance is lacking or that the iron is not being absorbed or that, if absorbed, it is not being utilized. The prevention of anemia of pregnancy is easier than the cure. An adequate diet, with proper hygiene, is the best prophylaxis.

**Estrogenic Substances in Blood of Women.**—Fluhmann examined 401 specimens of blood from eighty-four women and fifteen prepubertal girls. The blood of five of seven normal girls between the ages of 8 and 10 years gave positive reactions for estrogenic substance, whereas the tests were negative in seven of eight girls from 4 to 7 years of age. In twenty-two of twenty-five patients it was found that during the course of the menstrual cycle there was an increase in the concentration of estrogenic substance in the blood, which occurred during the midinterval and seemed to be associated with ovulation. A secondary rise just before or at the onset of menstruation was observed in seven instances. No characteristic variations were observed in four patients with anovulatory cycles. Of sixteen cases of menorrhagia, polymenorrhea or uterine hemorrhage due to hyperplasia of the endometrium, a rise in the concentration of the blood estrogenic substance was observed in ten at the onset of the bleeding. In patients with amenorrhea there was a cyclic rise and fall in the amount of estrogenic substance, a constant moderate amount of estrogenic substance was present or there was a persistent absence of demonstrable estrogenic substance. Estrogenic substances were found in the blood of women following castration and in the postclimacteric period. The presence of estrogenic substance in the blood was demonstrated in association with increased amounts of gonadotropic substance.

**Relation of Endometrial Hyperplasia to Adenocarcinoma of Uterus.**—Novak, with the assistance of Yui, reviewed the records of 12,813 cases that have been examined in his laboratory during a period of eleven years. They found 804 instances of endometrial hyperplasia and 104 of corporeal adenocarcinoma that suggested a relationship of some sort between the two conditions. While in the majority of cases hyperplasia is a frankly benign lesion, a small minority (fourteen of the 804) present evidences of marked proliferative tendencies, which may even simulate cancer. Atypical gland proliferations simulating adenocarcinoma are especially frequent in the polyps so often seen with hyperplasia. Hyperplasia is not rare in women long after the menopause (forty cases). The occasional occurrence of hyperplasia with bleeding in elderly women lessens the probability of granulosa-cell carcinoma of the ovary, unless an ovarian tumor can actually be palpated. In the study of the 104 cases of adenocarcinoma, the most impressive result was the demonstration of a coexisting hyperplasia and adenocarcinoma in twenty-five of the cases in which some of the noncancerous endometrium was available for study. Since seventy-eight of ninety-two adenocarcinoma patients were past the menopausal age, this suggests that a postmenopausal hyperplasia, or the endocrine dysfunction responsible for it, must strongly predispose to the development

of adenocarcinoma. Since a persistence and relative excess of estrogenic substance is accepted as the cause of hyperplasia, it would seem that it is this endocrine factor which must be suspected as the one predisposing to cancer genesis. The author emphasizes not only that the ordinary hyperplasia of the reproductive period is frankly benign from the histologic standpoint but also that it has no apparent predisposing influence in the causation of adenocarcinoma during menstrual life. It would seem from his studies that it is the postmenopausal persistence of hyperplasia which is in some way bound up with the occurrence of the common postmenopausal type of adenocarcinoma. In his cases of coexisting hyperplasia and adenocarcinoma, he has been able to show a definite transition of the benign to a borderline and then to an undoubtedly malignant pattern in some cases, so that in the endometrium at least it would seem that one is dealing with histologic intergrades between benign and malignant lesions. Whether abolition of ovarian function by x-rays or radium in the treatment of functional bleeding of the menopause would be of any practical value is questionable, since it seems quite certain that other sources of estrogenic substance than the ovary must be reckoned with. In the cervix uteri, corpus uteri and breasts one has to deal with the possible rôle of ovarian hormones. This seems significant in view of the growing opinion that the carcinogenic possibilities of estrogenic substances are most to be reckoned with in those organs in the growth and activities of which the estrogenic principle normally plays an important part.

### Annals of Internal Medicine, Lancaster, Pa.

10: 427-568 (Oct.) 1936

- Common Lesion of Cervical Spine Responsible for Segmental Neuritis. E. L. Turner and A. Oppenheimer, Beirut, Syria.—p. 427.  
Acute Pneumonitis. W. H. Allen, Fort Sam Houston, Texas.—p. 441.  
Diverticula of Stomach. L. Martin, Baltimore.—p. 447.  
Study of Four Cases of Acquired Arteriovenous Fistula by Means of Thorotrast Arteriography. W. M. Yater, Washington, D. C.—p. 466.  
Effects of Gastric and Intestinal Hyperperistalsis on Electrocardiogram as Demonstrated by Simultaneous Mechanograms and Indirect and Semidirect Electric Leads. I. H. Tumpeer, Chicago.—p. 487.  
Value of Sedimentation Test as Diagnostic Aid. J. E. Hirsh, Birmingham, Ala.—p. 495.  
Clinical Experiences with Reduced Doses of Thevetin Orally Administered. E. R. Daniels and W. S. Middleton, Madison, Wis.—p. 505.  
Diagnosis and Treatment of Hyperinsulinism. S. Harris, Birmingham, Ala.—p. 514.  
\*Massive Doses of Vitamin D in Treatment of Proliferative Arthritis. B. L. Wyatt, R. A. Hicks and H. E. Thompson, Tucson, Ariz.—p. 534.

**Massive Doses of Vitamin D in Treatment of Proliferative Arthritis.**—Wyatt and his associates selected forty patients having chronic infectious or proliferative arthritis for treatment by massive doses of vitamin D. These patients had been under observation for at least six months and it was possible thereby to contrast their progress before and after the administration of large doses of vitamin D. There was no special selection of patients other than that any patient was eliminated whose general condition was such that a severe reaction might be disastrous. Later it became evident that the presence of a very sensitive colon contraindicated the use of the vitamin in large quantities. In general it was found that the type of arthritic patient for whom vaccine is indicated was decidedly not the type in which to use massive doses of vitamin D. After a baseline in degree of progress for six months was established, massive daily doses of vitamin D (not more than 300,000 units, but usually 200,000 units) with supplementary medication (vitamin B and calcium) were instituted and similar studies of the patient were continued. The additional treatment of these patients consisted of adequate rest, physical therapy, heliotherapy, dietotherapy, treatment or early removal of foci, blood transfusions, orthopedic measures and intravenous bacterial antigen. There were individual variations. The percentage of clinical improvement noted was considered definite and clear cut in 20 per cent; i. e., in eight patients a definite progressive increase in appetite, weight, general feeling of strength and a decrease in joint swelling, pain and stiffness were evident. Similarly, in eight patients it was necessary to abandon the treatment entirely, owing to unfavorable reactions. The remaining twenty-four patients showed no definite benefits that could be attributed to vitamin D therapy. The morphologic blood picture did not alter in these patients more rapidly or more distinctly in general than it does in other patients

treated without vitamin D. Calcium and phosphorus determinations exhibited only minimal changes, the average increase in calcium content of the serum being from 0.75 to 0.95 mg. All determinations were within normal limits. There was no significant change in the calcium phosphorus ratio noted.

### Archives of Neurology and Psychiatry Chicago

36: 675-916 (Oct.) 1936

- Electrical Activity of the Cat's Brain. R. W. Gerard, W. H. Marshall and L. J. Saul, Chicago.—p. 675.  
 \*Pick's Disease: Clinicopathologic Study with Report of Two Cases. A. Ferraro and G. A. Jervis, New York.—p. 739.  
 Id.: Clinicopathologic Contribution. K. Löwenberg, Ann Arbor, Mich.—p. 768.  
 \*Psychiatric, Neurologic and Neuropathologic Studies in Disseminated Alternative Arteriolitis. Lauretta Bender, New York.—p. 790.  
 Effect of Benzedrine Sulfate on Mood and Fatigue in Normal and in Neurotic Persons. A. Myerson, Boston.—p. 816.

**Pick's Disease.**—Ferraro and Jervis conclude that in Pick's disease neuronal changes consist primarily of cellular atrophy extending to the whole cortex, with accentuation in the frontal and temporal lobes. The cortical senile atrophy may at times be most evident in the third layer, as is observed also in Pick's disease. Histopathologic details common to senility and to Pick's atrophy add further evidence to the similarity, among which are the frequency of pigmentary surcharge and fatty degeneration of the nerve cells, the presence of numerous corpora amylacea and torpedos, and the large amount of iron. The formation of cellular argentophilic inclusions may be due to a physicochemical process leading to the formation of argentophilic substance, which is commonly observed in association with senility. Senile plaques were not observed in the authors' two cases. However, the significance of these formations as pathognomonic of senile processes is still uncertain. In their cases, evidence of histopathologic changes representing tissue response to vascular involvement was observed. In striking contrast with these tissue changes, however, there were noted only slight alterations in the blood vessels, consisting mainly of fibrosis of a few capillaries and occasionally of endothelial proliferation. Similar contrasts are frequent in the general pathologic changes of arteriosclerosis. In Pick's disease, vascular spasm can explain the circumscribed zones of gross cortical atrophy as a result of repeated local vasospasms. Whether angiospasm may more easily affect predisposed tissue the authors are not prepared to say, though in their material they encountered changes comparable to those associated with normal and pathologic senility. The angiospasm might be produced by disturbance of the colloidal equilibrium or it may also be due to metabolic toxic factors of undetermined origin which act through the mechanisms of vasospasm or independently of it.

**Studies in Disseminated Alternative Arteriolitis.**—Bender presents two cases of disseminated alternative arteriolitis in which the typical vascular lesions were evinced in the brain as well as in other organs of the body, although endocarditis was not present. The two cases are instances of apparent infection, one associated with a pulmonary process and the other with an abortion, in which lesions of the heart valves and walls were not detected but in which the productive arteriolitis was present in the myocardium and in all internal organs, including the brain. The cerebral lesions were like those in other organs of the body and were characterized by endothelial proliferation, swelling, necrosis and obliteration of the lumen. This endothelial hypertrophy occurred especially as a knotlike process at the point at which the arterioles break into the capillary network. It had a characteristic localization in the central nervous system in the larger groups of nerve cells. The vascular lesions were associated with secondary loss or paling of the nerve cells and proliferation of the astrocytic cells and with typical neurologic and psychic disturbances related to the failure in function of the cerebral and cerebellar centers and those of the brain stem. The lesions and the secondary organic failure were progressive; in one case death was due apparently to cerebral failure and in the other to cardiovascular, renal and hepatic failure, with associated cerebral signs. The concept of this disease entity has evolved from that of acute bacterial endocarditis, in which an infectious agent produces a productive and destructive lesion of the whole inner lining of the cardiovascular system, with typical vegetative endocarditis in the more acute forms.

### Archives of Ophthalmology, Chicago

16: 555-732 (Oct.) 1936

- Treatment of Atrophy of Optic Nerve. H. Lauber, Warsaw, Poland.—p. 555.  
 Iridectomy with Cyclodialysis for Reduction of Ocular Tension. J. M. Wheeler, New York.—p. 569.  
 Treatment of Angioma of Eyelid by Injection of Sclerosing Solutions. B. Malkin, Saratow, U. S. S. R.—p. 578.  
 Postoperative Glaucoma. S. A. Fox, New York.—p. 585.  
 Ophthalmologist, Oculist, Optician and Optometrist: Origin of These Words in the English Language. F. H. Rodin, San Francisco.—p. 609.  
 Malformations of Posterior Segment of Human Eye: Embryologic Interpretation. Bertha A. Klien, Chicago.—p. 624.  
 Choice of Surgical Procedure for Strabismus. H. G. Merrill, San Diego, Calif.—p. 642.  
 New Type of Telescopic Lens. M. L. Berliner, New York.—p. 649.  
 Further Observations on Detachment of Choroid After Cataract Extraction. C. S. O'Brien, Iowa City.—p. 655.  
 Preparation of Orbits of Cadavers for Dissection and Operation. O. V. Batson, Philadelphia.—p. 657.  
 \*Cataract Extraction Through a Vertical Conjunctival Slit: Preliminary Report. W. Moehle, Brooklyn.—p. 659.  
 Adenocarcinoma of Orbit. W. L. Benedict, Rochester, Minn.—p. 663.  
 \*Choroidal Chorionepithelioma Secondary to Teratoma of Testicle. A. E. MacDonald, Toronto.—p. 672.  
 Hyperplasia of Epithelium of Ciliary Processes (Ciliary Adenoma of E. Treacher Collins): Case. W. Zentmayer, Philadelphia.—p. 677.  
 Transparent Exophthalmometer. W. H. Luedde, St. Louis.—p. 681.

**Cataract Extraction Through a Vertical Conjunctival Slit.**—Moehle states that with his method of extracting the lens the anatomic conjunctival supply of blood to the region of the corneal section is retained, because the incision is made parallel to the course of the vessels, thus assuring maximal nutrition and avoiding unnecessary hemorrhage. The method also facilitates the making of the corneal section with a keratome, with subsequent enlargement of the section with scissors subconjunctivally. The vertical slit renders the iris and capsule accessible and does not interfere with the delivery of the lens. No conjunctival suture is required, since the undermined conjunctiva immediately lies smooth and flat, with the edges of the incised wound in close approximation. However, if desired, a suture may be inserted, closing the conjunctival incision.

**Choroidal Chorionepithelioma Secondary to Teratoma of Testicle.**—MacDonald saw a choroidal chorionepithelioma in a young man who complained of a painless mass in the scrotum. Marked endocrine disturbance was present, as he showed some of the secondary manifestations of pregnancy, linea nigra and female distribution of pubic hair, hypertrophy of the breasts and secretion in the acini. Following removal of the eye owing to the rapid growth of the tumor, the clinical diagnosis was made and was later confirmed at necropsy. The mixed tumor of the testicle was a true teratoma involving all three primitive layers. All the metastases were of the chorionepithelioma type and were widespread. The pituitary gland showed marked changes, and the Aschheim-Zondek test for urine was positive.

### Archives of Pathology, Chicago

22: 435-582 (Oct.) 1936

- Plastic Studies in Abnormal Renal Architecture: IV. Vascular and Parenchymal Changes in Arteriosclerotic Bright's Disease. Dorothy Loomis, Brooklyn.—p. 435.  
 Viability of Cells in Inflammatory Exudates. F. E. Kredel and Helen M. Van Sant, Chicago.—p. 464.  
 Somatic Carcinoma and State of Interstitial Cells of Testicle. E. E. Collins, Cleveland.—p. 470.  
 \*Calcific Sclerosis of Aortic Valve (Mönckeberg Type.). A. R. Sohval and L. Gross, New York.—p. 477.  
 Histologic Features of Intradermic Reaction to Tuberculin in Cattle. W. H. Feldman, Rochester, Minn., and C. P. Fitch, St. Paul.—p. 495.  
 Epidemic Encephalitis in Japan: Causative Agent Compared with That in the St. Louis Epidemic. R. Kawamura, M. Kodama, T. Ito, T. Yasaki and Y. Kobayakawa, Niigata, Japan.—p. 510.  
 \*Hemorrhagic Extravasations into Leaflets of Atrioventricular Valves: Their Relationship to Pulmonary Embolism. E. Clark and A. R. Berger, New York.—p. 524.  
 Experimental Pulmonary Embolism and Infarction. B. Steinberg and C. S. Mundy, Toledo, Ohio.—p. 529.  
 Production of Intimal Changes in Arteries Attempted in Rat by Prolonged Feeding of Acetoacetic Acid. J. J. Short, M. Bruger and L. Jaffe, New York.—p. 543.

**Calcific Sclerosis of Aortic Valve (Mönckeberg Type).**—Sohval and Gross discuss the changes that they found in eighteen hearts with so-called Mönckeberg's calcific sclerosis of the aortic valve, in nineteen hearts with a grossly poly-

valvular extinct rheumatic process and in thirteen hearts with a grossly monovalvular extinct rheumatic process. Essentially different gross and microscopic features were revealed in the Mönckeberg and rheumatic valvular lesions. The heart with the uncomplicated Mönckeberg process shows practically none of the stigmas of extinct rheumatic fever and no other evidence which would indicate that the process is secondary to inflammatory changes. The possible mechanisms concerned in the development of the essential Mönckeberg process appear to be purely and primarily degenerative, its occurrence and extent depending in all probability on individual predisposition to collagen involution and lipid and calcium deposition. The lesions of three hearts with submarginal aortic commissural bridging of noninflammatory nature suggest that stress and strain in the aortic valve may serve as additional factors predisposing to degenerative processes. In certain persons in whom there exists a predisposition toward the deposition of lipid and calcium, inflammatory lesions with subsequent deformity of the aortic valve may impose sufficient strain on the valve to initiate the Mönckeberg process.

#### Hemorrhage into Leaflets of Atrioventricular Valves.

—Clark and Berger observed hemorrhagic extravasation into noninflamed atrioventricular valvular leaflets at necropsy in four persons at Bellevue Hospital. In one, ecchymoses of the leaflets of the mitral and tricuspid valves accompanied similar extravasations beneath the mural endocardium. In the other three the strict limitation of the endocardial ecchymoses to the leaflets of the tricuspid valve and the coexistence of embolism of the pulmonary artery suggested a relationship between the hemorrhagic extravasations and the embolism. Though in all four cases some of the valvular ecchymoses involved the vascularized annulus and might have been due to rupture of those vessels, other hemorrhages were localized in the distal nonvascularized portions of the leaflets. The source of the red cells in the latter portions remains obscure. Though it is possible that cells from ruptured vessels at the annuli infiltrated the distal portions of the leaflets, no evidence of this was obtained even in serial microscopic sections. In view of the common persistence of vessels in the leaflets of the tricuspid and mitral valves, the possibility exists that the blood cells were derived from ruptured vessels which evaded detection. Penetration by cells from the chamber of the heart through disruption of the lining of the leaflets is impossible to exclude, although the authors could not establish it by microscopic examination. The limitation of the hemorrhages to the leaflets of the tricuspid valve in the three cases of pulmonary embolism reported here, as well as in the two described by Geipel, supports the belief that the two phenomena are related. Whether this is due to trauma to the leaflet by the embolus during its passage through the tricuspid orifice or as the result of an abrupt rise in intraventricular tension cannot be determined.

#### Arch. of Physical Therapy, X-Ray, Radium, Chicago

17: 609-672 (Oct.) 1936

- Educational Standards for Physical Therapy Technicians. O. N. Andersen, Chicago.—p. 615.  
The American Registry of Physical Therapy Technicians. Marion G. Smith, Chicago.—p. 619.  
Cancer Clinic in Medical and Dental Schools. G. E. Ward, Baltimore.—p. 622.  
Role of Physical Therapy in Fractures. O. B. Bolilaugh, Washington, D. C.—p. 627.  
Effective European Methods of Hydrotherapy Neglected in the United States. C. I. Singer, Long Beach, N. Y.—p. 631.  
Rheumatic Problem in Great Britain. R. Kovacs, New York.—p. 636.  
Notes on Backscatter in X-Ray Calibration. C. C. McClure and A. C. Omberg, Nashville, Tenn.—p. 640.  
Iontophoresis in Rheumatoid Arthritis. R. T. Phillips, Boston.—p. 642.  
Recent Advances in Short Wave Diathermy. F. Nagelschmidt, Manchester, England.—p. 644.  
\*Local Heat Treatment in Ozena: Preliminary Report. C. K. Gale, New York.—p. 646.

**Local Heat Treatment in Ozena.**—Gale's method for the treatment of ozena consists of the direct application of heat to a large surface of the nasal mucous membrane for prolonged periods. Into the right nasal fossa a rubber applicator of special design and shape is inserted, which has been filled with barium for roentgenographic purpose. It extends the entire length of the inferior meatus back to the posterior nasopharynx and upward beyond the level of the middle turbinate. On inflation

it establishes contact with both the medial and lateral walls of the nose. If instead of barium the applicator is filled with a heated solution from an Elliott apparatus, a heat effect by direct contact over the entire area will be obtained. In the clinical application, suction is first applied which collapses the applicator by vacuum action and facilitates complete filling of the applicator with a solution only. The applicator is made of very thin but strong rubber and, when inserted into the nose, has the appearance and thinness of a jack knife blade. It has no shape but conforms by its ballooning action to the space in which it is confined. The ballooning out of the applicator establishes contact in the areas of the eustachian tube, sphenoid sinus and posterior ethmoidal cells. The clinical significance of the ability to establish direct heat contacts in these otherwise inaccessible areas is evident. With a short and an ultrashort wave apparatus of 500 watt output, local treatment to the head need not exceed temperatures of 102 F. Temperatures in the sphenoidal and ethmoidal regions have been even less owing to radiation losses through the inspired air. Since the temperature of the solution circulated through the applicator is elevated to 125 F., one is certain to obtain a local temperature much higher than with short waves. The author treated four cases of ozena showing the classic signs and symptoms of atrophy, crusts and fetor. Within a week the crusts became reduced, the odor disappeared and the patients were markedly improved. The results were achieved by the physiologic reactions of the diseased tissues to the local application of heat.

#### Arkansas Medical Society Journal, Fort Smith

33: 97-116 (Nov.) 1936

- Glaucoma Simplex: Some Problems. H. Moulton, Fort Smith.—p. 97.  
Cyanosis in Infancy. S. Phillips, Little Rock.—p. 99.  
Treatment of Malaria: Review of Literature. W. B. Grayson and G. Hastings, Little Rock.—p. 102.

#### Canadian Medical Association Journal, Montreal

35: 357-474 (Oct.) 1936

- Malignant Nephrosclerosis (Malignant Hypertension): Report of Two Cases. L. J. Adams, Montreal.—p. 357.  
Alzheimer's Disease with Neuropathologic Findings: Case. J. A. Hannah, Toronto.—p. 361.  
Filling Defects in X-Ray Pictures of Stomach Due to Disease of Adjoining Structures. N. B. Gwyn and R. A. Thomas, Toronto.—p. 367.  
\*Carcinoma Originating in Sebaceous Cysts. D. C. Collins, Los Angeles.—p. 370.  
Myasthenia Gravis: Results of Treatment in Six Cases. H. H. Hyland, Toronto.—p. 372.  
Radiologic Treatment of Cancer: Methods and Results 1928-1935: II. Carcinoma Cervicis Uteri. G. E. Richards and W. G. Cosbie, Toronto.—p. 381.  
Id.: III. Malignant Lesions of the Tonsil and Its Pillars. G. E. Richards, Toronto.—p. 385.  
Basal Anesthesia in Children's Surgery. H. E. Coe, Seattle.—p. 390.  
Pregnancy Complicated by Rheumatic Heart Disease. D. N. Henderson, Toronto.—p. 394.  
Complications of Artificial Pneumothorax: A Review. T. G. Heaton, Toronto.—p. 399.  
\*Embolism and Sudden Thrombosis of Arteries of Extremities. R. E. McKechnie 2d, Rochester, Minn.—p. 406.  
Psychologic Distinction Between Various Types of Schizophrenia. W. H. Cassels, Madison, Wis.—p. 411.  
Mussel Poisoning in Nova Scotia. A. L. Murphy, Halifax, N. S.—p. 418.  
Carbon Tetrachloride Poisoning. C. Young, Toronto.—p. 419.  
Observations on Intestinal Flora Found in Montreal. Pauline Beregoff-Gillow, Montreal.—p. 421.

**Carcinoma Originating in Sebaceous Cysts.**—Collins tabulates the eighty-four instances, available in the literature, of carcinoma occurring in sebaceous cysts. The summarized data imply that sex is of little significance. The patients are elderly, the average age being 57.5 years. In twenty instances the average known existence of the sebaceous cyst had been 8.7 years. In 91.4 per cent the malignant sebaceous cysts were located on the head or neck. In 40 per cent of the patients it was necessary to perform two or more operations so as to remove the lesion completely. In thirty-four of the reported cases, 14.7 per cent were basal cell epitheliomas, but none of them arose from a sebaceous cyst situated in the scalp. This is of interest, as a study of fifty-eight of the reported malignant cases showed that 34.5 per cent had occurred in the scalp. Of the five patients having epidermoid carcinoma graded 3 and 4, two died from recurrence. Fourteen cases were graded 1 or 2, and no deaths were attributable to a recurrence of the carcinoma. In a clinical follow-up study made on thirty-four of the patients,

70.6 per cent were well; 14.7 per cent had died from recurrence of the epithelioma; 8.8 per cent could not be traced, and 5.8 per cent had died from causes unrelated to their previously removed malignant sebaceous cyst. Three cases of sebaceous cyst with malignant degeneration are reported. These occurred in some 9,000 routine examinations of all types of pathologic material, an incidence of about 0.033 per cent.

**Sudden Thrombosis of Arteries of Extremities.**—McKechie points out that emboli which involve the acral arteries originate somewhere in the proximal portion of the arterial tree, in the left side of the heart or in the pulmonary veins, except the occasional paradoxical embolus, which occurs when a patent foramen ovale is present. Thrombosis of an acral artery actually occurs secondarily to some primary process in the vessel or blood, such as embolism, degenerative processes in the wall of the vessel, inflammation, trauma or increased coagulability of the blood. Thrombosis may occur in an extremity following operation. Extension of thrombosis from small arteries close to the field of operation to the larger arteries may be the explanation in some cases. However, this does not explain the sudden thrombosis of a vessel distant from the site of operation. In these cases it is possible that increased coagulability of the blood plasma, particularly if the patient is debilitated, may be one of the factors, and stagnation of the blood, which is attributable to inactivity of a limb subsequent to an operation, is probably one of the accessory causal factors when associated with unusual conditions present at the time of operation, such as severe infection or arteriosclerosis. The pathologic changes in sudden arterial occlusion of an extremity occur in the limb or in the vessel at the site of obstruction. The changes that occur in the limb are the result of the ischemia rather than of the thrombus or embolus. The changes in the vessel in the region of the occlusion vary according to the nature of the occluding factor; thus, in thrombo-angiitis obliterans, periarteritis nodosa and bacterial arteritis, signs of inflammation are present microscopically and even macroscopically. Pain is usually the initial and most frequent complaint. Other symptoms of less frequent occurrence are tingling, tenderness, cramps, itching, pallor and burning. Absence of pulsation below a given point in an artery is indicative of arterial occlusion, if a normal arterial tree is assumed to begin with. If this absence of pulsation is associated with abnormal pallor and decreased surface temperature, the diagnosis of recent arterial occlusion is justified. The prognosis in sudden peripheral arterial occlusion is not always good, as gangrene has developed in about half of the cases studied.

### Florida Medical Association Journal, Jacksonville

23: 159-208 (Oct.) 1936

- Acute Craniocerebral Injuries from Neurosurgical Standpoint. J. G. Lyster, Jacksonville.—p. 173.  
Sulfur, a Forgotten Remedy. H. Gates, Bradenton.—p. 177.  
Live Longer. L. S. Oppenheimer, Tampa.—p. 181.  
Idiopathic Thrombocytopenic Purpura Haemorrhagica Treated by Splenectomy: Report of Case. C. L. Perry and J. M. McClamroch, Miami.—p. 184.  
Relationship of Radiology to Pediatrics. F. J. Payton, Miami Beach.—p. 185.

### Georgia Medical Association Journal, Atlanta

25: 345-384 (Oct.) 1936

- The Problem of the Diaphragm. A. M. Shipley, Baltimore.—p. 345.  
Effect of Emotional Disturbances on Sleep. G. Giddings, Atlanta.—p. 351.  
Five Unusual Fractures. J. H. Mull, Rome.—p. 359.  
Friedman's Modification of Aschheim-Zondek Test for Pregnancy. G. F. Klugh, Atlanta.—p. 362.  
\*Antitoxin Treatment of Meningococcic Infections and Meningitis. H. J. Morrison, Savannah.—p. 365.

25: 385-428 (Nov.) 1936

- Hypertension. S. R. Roberts, Atlanta.—p. 413.  
Arteriovenous Aneurysm. D. C. Elkin, Atlanta.—p. 417.  
Conservative Management of Eclampsia. E. D. Colvin and R. A. Bartholomew, Atlanta.—p. 423.

**Antitoxin Treatment of Meningococcic Infections.**—By comparing the relative efficiency of meningococcus antitoxin and antimeningococcus serum, Morrison relates the experimental and clinical progress made in the treatment of meningococcic infection. The final data of Hoyne's investigations made in three hospitals show that over a period of eighteen months 319

patients were treated, 217 receiving two well known standard brands of antimeningococcus serum with 100 deaths and 102 receiving the experimental antitoxin with twenty deaths. In Levy's series of twenty-four cases treated with meningococcus antitoxin there were six deaths. His method of administration was much the same as Hoyne's. The mortality rate in Memphis over a period of nine years prior to 1933 was 57.1 per cent. In addition to the marked reduction of the mortality rate when antitoxin is used, other observations made seem pertinent. In no instance did an ocular or auditory complication develop after the institution of antitoxin therapy. The period of hospitalization for antitoxin-treated patients averaged 16.2 days, while those receiving antimeningococcus serum averaged eighteen days. A skin sensitization test should be made when antitoxin or antiserum is given intravenously, and in doubtful cases a small amount of epinephrine may be given at the same time. Usually a serum reaction occurs at about the sixth or eighth day, when it may be necessary to control the urticaria by means of epinephrine hydrochloride. The meningococcus antitoxin has a decided advantage over the antimeningococcus serum. It is believed that, as more antitoxin is given intravenously, less will have to be given intraspinally.

### Illinois Medical Journal, Chicago

70: 305-396 (Oct.) 1936

- Injuries to Esophagus. C. D. Sneller, Peoria.—p. 325.  
Correlation of Clinical Treatment of Burns with Recent Experimental Studies. H. N. Harkins, Chicago.—p. 332.  
Interpretation of Hilus Shadows in Chest X-Rays of Children. J. A. Bigler, Highland Park.—p. 338.  
\*Ketosis in Treatment of Epilepsy: Effects of Diacetone Alcohol on Institutional Epileptics. I. Finkelman, Chicago; W. Mary Stephens, L. B. Shapiro and De L. Sackett, Elgin.—p. 343.  
Epidemic Respiratory Diseases in Early Life: Clinical Study: Preliminary Report. S. J. Wilkinson, Decatur.—p. 348.  
Vasospastic Disease of Hands of Miners Due to Vibration. C. H. Drenckhahn, Urbana.—p. 354.  
Irradiation Therapy of Intracranial Neoplasms. T. J. Wachowski and A. Hartung, Chicago.—p. 357.  
Method of Performing Nephrostomy and Its Values. W. W. Holland, Beardstown.—p. 361.  
Practical Points in Hearing Tests and Selection of Hearing Aids. R. Sonnenschein, Chicago.—p. 365.  
Dermatophytosis of Feet, Hands and Groins: Clinical and Therapeutic Consideration Emphasizing the Stages of Infection. W. J. Morginson, Springfield.—p. 371.  
Eugenics and Its Relation to the Community. O. Hawkinson, Chicago.—p. 376.  
The Committee on Maternal Welfare. W. C. Danforth, Evanston.—p. 379.  
Syphilitic Pancreatitis: Case. W. S. Siewerth, Chicago.—p. 380.  
Dr. John Zahn, Pioneer German-American Physician. C. A. Earle, Des Plaines.—p. 381.  
Securing Permission for Autopsies. F. P. Hammond, Chicago.—p. 383.  
Incapacitating Cholelithiasis in a Male Aged 20. H. O. Veach, Kewanee.—p. 387.  
Medical Significance of Unrecognized Perforated Peptic Ulcer. H. A. Singer, Chicago.—p. 387.

**Ketosis in Treatment of Epilepsy.**—To determine whether the acetone bodies developed in the course of the ketogenic diet are the factors that inhibit epileptic convulsions, Finkelman and his associates treated eleven institutional epileptic patients with diacetone alcohol. From 2 to 6 drachms (8 to 24 cc.) of the drug were given daily during two periods of treatment. The first period was from forty to fifty days and the second was fifty days. There was an intervening period of twenty-five days during which no medication was given. It was found that diacetone alcohol was not anticonvulsant in institutional epileptic patients. The urine in seven patients was positive for acetone and there was no correlation between the number and severity of the seizures and the acetone reaction in the urine. The blood sugar was increased in four patients and lowered in one. Diacetone alcohol was injected intravenously into six rabbits in order to ascertain the relation of this drug to blood sugar. It was found that there was a definite increase in the blood sugar level following the administration of this drug. The discrepancy in the action of diacetone alcohol in human epilepsy and in the thujone convulsions in rabbits is probably due to a failure of obtaining a sufficiently high ketone blood level in human epilepsy at the time a convulsive seizure is imminent. The ketogenic diet may be more efficacious in maintaining a high ketone blood level than the administration of the ketone bodies as such. However, it is more likely that the results

obtained with the ketogenic diet are due to the shifting of intracellular fluid and potassium across the cell membrane that accompanies a strongly ketogenic diet. The rise in blood sugar caused by diacetone alcohol is due to an inhibition of insulin activity which this drug probably causes.

### Indiana State Medical Assn. Journal, Indianapolis

29: 559-614 (Nov.) 1936

Medical Progress: History Forecasts. R. L. Sensenich, South Bend.—p. 559.  
A Critical Evaluation of Recent Advances in Contagious Diseases. J. A. Toomey, Cleveland.—p. 563.  
Head Injuries. R. L. Glass, Indianapolis.—p. 568.  
Constipation and Cathartics. C. O. Richey, Evansville.—p. 571.  
Reverse Spondylolisthesis: Case Report. E. T. Stahl, Lafayette.—p. 574.  
Closer Cooperation Among Physicians. E. H. Brubaker, Flora.—p. 576.

### Journal of Immunology, Baltimore

31: 167-256 (Sept.) 1936

Active Immunization Against Poliomyelitis: Comparative Study: I. Attempts at Immunization of Monkeys and Children with Formalized Virus. S. D. Kramer, Brooklyn.—p. 167.  
Id.: II. Experimental Immunization of Monkeys with Virus Treated with Sodium Ricinoleate. S. D. Kramer and L. H. Grossman, Brooklyn.—p. 183.  
Id.: III. Active Immunization of Monkeys with Exactly Neutralized Mixtures of Virus and Serum. S. D. Kramer, Brooklyn.—p. 191.  
Id.: IV. Experimental Immunization of Monkeys with Purified Virus, Adsorbed on Aluminum Hydroxide. S. D. Kramer, L. H. Grossman and B. Hoskwith, Brooklyn.—p. 199.  
Vitamin C and Anaphylactic Shock in Guinea-Pigs. B. Solomonica, New York.—p. 209.  
Serum Sickness in Rabbits: VI. Influence of Removal of Lipids from Serum on Occurrence of Serum Sickness. L. Jones and M. S. Fleisher, St. Louis.—p. 215.  
Studies on Mechanism of Immunity in Typhus Fever: III. Demonstration of Opsonins for Rickettsia Prowazeki in Typhus-Immune Serum. M. Ruiz Castaneda, Boston.—p. 227.  
Availability of Specific Pneumococcus Antibody After Intravenous, Intramuscular and Subcutaneous Injection: Including Study of Cutaneous Reactions to Type-Specific Polysaccharides Following Serum Injection. R. C. Tilghman and M. Finland, Boston.—p. 239.

### Journal of Infectious Diseases, Chicago

59: 131-224 (Sept.-Oct.) 1936

Effect of Chemical Constitution of Soaps on Their Action on Diphtheria Toxin. M. Bayliss, Minneapolis.—p. 131.  
Characteristics of Small Colony Variants, with Especial Reference to Shigella Paradyserteriae Sonne. B. D. Chinn, Chicago.—p. 137.  
\*Experimental Rabies in White Mice II: Studies on Passive Immunization. A. Hoyt, R. T. Fisk, F. J. Moore and R. L. Tracy, Los Angeles.—p. 152.  
Occurrence of Bacillus Necrophorus Agglutinins in Different Species of Animals. W. H. Feldman, H. R. Hester and F. P. Wherry, Rochester, Minn.—p. 159.  
Production of Heterophile Antigen by Certain Bacteria and Plants. G. E. Rockwell and H. C. Van Kirk, Cincinnati.—p. 171.  
Bacterial Resistance in B-Deficient Dogs. S. B. Rose and W. B. Rose, Philadelphia.—p. 174.  
Improved Spiral Glass Electrode and Vacuum Tube Potentiometer Applied to Measurement of Serum Hydrogen Ion Concentration in Experimental Streptococcal Infections in Rabbits. P. J. Hartsuch, Chicago.—p. 183.  
Study of Some Acid-Fast Actinomycetes from Soil, with Especial Reference to Pathogenicity for Animals. Ruth E. Gordon and W. A. Hagan, Ithaca, N. Y.—p. 200.  
Local Points of Defense and Passive Transfer of Acquired Immunity to Nippostrongylus Muris in Rats. M. P. Sarles and W. H. Taliaferro, Chicago.—p. 207.  
Experimental Syphilitic Keratitis in Rabbit. A. J. Galarie, New York.—p. 221.

**Passive Immunization in Experimental Rabies.**—Hoyt and his co-workers were able to build immunity in white mice sufficiently high to protect a moderate percentage of animals against intracerebral inoculation of the Cutter strain of fixed virus. An extremely high type of such an immunity may be developed against this virus when it is introduced by the intramuscular route. However, it was necessary to introduce antiserum within a relatively short interval before the inoculation of virus. Antiserum given intraperitoneally showed its greatest effect when injected four days or less before the virus. It was relatively ineffective on injection ten days before the virus and appeared entirely lacking in protective properties when administered sixteen days before the infecting dose of virus. The intracerebral administration of serum at an interval of twenty-four hours before the virus was sufficient to decrease greatly the efficacy of passive immunization. Serum antibodies can neutralize virus in vivo only if they reach the virus before it has had time to gain sufficient access to its tissues of choice.

An alternative explanation, recently discussed by Sabin, would necessitate that contact be made between antiserum and the susceptible cells either before or when these cells come into contact with the virus.

### Michigan State Medical Society Journal, Lansing

35: 627-688 (Oct.) 1936

Some Significant Contributions to Basic Sciences Made in Michigan. G. C. Penberthy, Detroit.—p. 627.  
Undulant Fever: Brucellosis; Melitensis; Malta Fever; Mediterranean Fever. C. E. Vreeland, Detroit.—p. 632.  
Diseases of Kidney: Differential Diagnosis. R. E. Cumming, Detroit.—p. 638.  
Study of Epilepsy in Detroit: Preliminary Report. O. P. Kimball, Cleveland, and D. W. Gudakunst, Detroit.—p. 641.  
Principles of Diet Therapy. S. S. Altshuler, Detroit.—p. 645.  
Interpretation of Encephalograms. R. N. De Jong and R. W. Waggoner, Ann Arbor.—p. 652.  
Suction Apparatus. R. V. August, Muskegon Heights.—p. 657.  
Physical Therapy in Dermatology. L. Orecklin, Detroit.—p. 659.

### Missouri State Medical Assn. Journal, St. Louis

33: 407-438 (Nov.) 1936

\*Cancer Viewed as a Preventable Disease. M. P. Neal, Columbia.—p. 407.  
Determination of Type of Treatment for Cancer from Pathologic Studies. F. C. Helwig, Kansas City.—p. 413.  
Diagnosis and Treatment of Early Cancer of the Breast. R. E. Schluter, St. Louis.—p. 416.  
Cancer of Rectum. E. Fischel, St. Louis.—p. 419.  
Management of Lymphatic Areas Tributary to Oral Cancer. E. C. Padgett, Kansas City.—p. 423.

**Cancer Prevention.**—Neal states that a concerted move toward cancer prevention requires that: 1. Cancer prevention be taught by a more intensive and practical instruction of medical students on the subject of precancerous conditions and by frequent postgraduate reviews for the practitioners of medicine by men interested, qualified and enthusiastic in this field. 2. Cancer prevention should be preached by participating actively in the efforts to enlighten and instruct members of the profession and the public in matters pertaining to cancer, especially the possibilities and importance of its prevention. 3. In the practice of cancer prevention the desirability of regular and stated examinations for the detection of disease processes should be advocated. 4. Cancer should be approached from the point of view of prevention. Group team work including social, clinical and pathologic studies under suitable conditions promises much in the field of cancer investigation. The neglect of and the indifference to such studies are detrimental to the further acquisition of knowledge of cancer.

### New York State Journal of Medicine, New York

36: 1473-1586 (Oct. 15) 1936

Induced Hypoglycemic State in Treatment of Psychoses. B. Glueck, Ossining.—p. 1473.  
Malignant Neoplasms of Colon. F. W. Rankin, Lexington, Ky.—p. 1485.  
Streptothrix and Monilia Infections as Clinical Entities. R. H. Irish, Troy.—p. 1491.  
Sympathetic Ophthalmia Following Intra-Ocular Operations. H. H. Joy, Syracuse.—p. 1498.  
Present Status of Surgical Treatment of Retinal Detachments. M. J. Schoenberg, New York.—p. 1503.  
Report of Poisoning by Cicuta Maculata: Water Hemlock. D. R. Haggerty, Arkport, and J. A. Conway, Hornell.—p. 1511.  
\*Arthritis: Blood Changes in Arthritis. R. L. Cecil, New York.—p. 1515.  
Use of Heat in Care of Arthritic Patient. S. L. Warren and Emmy Lehmann, Rochester.—p. 1523.  
Treatment of Arthritis, with Particular Reference to Vaccines and Allergic Reactions. C. H. Hitchcock, Syracuse.—p. 1527.  
Economic Problems of Physical Therapy. S. E. Bilik, New York.—p. 1533.  
Subcutaneous Rupture of Stomach: Review of Literature and Report of Case. N. J. Wolf, Buffalo.—p. 1539.  
Differential Diagnosis of Conditions Associated with Sugar Excretion. W. G. Exton, New York.—p. 1545.  
Cooperation of Patients in Early Diagnosis and Treatment of Pulmonary Tuberculosis. J. H. Korns, Olean.—p. 1554.  
Gallstones in Appendix: Case Report. F. J. Lennon, Buffalo.—p. 1557.  
Hormone Control of Uterus. R. Kurzrok, E. G. Miller and Jessie Reed Cockrill, New York.—p. 1558.  
Between Mental Health and Mental Disease. B. Liber, New York.—p. 1561.

**Blood Changes in Arthritis.**—Cecil contends that of the five most common types of arthritis (gonococcal arthritis, rheumatic fever, rheumatoid arthritis, osteo-arthritis and gout), with the exception of osteo-arthritis, there are fairly reliable

blood tests for each: the complement fixation test for gonorrheal arthritis, the antistreptococcal test for rheumatic fever, the agglutination reaction for rheumatoid arthritis and the blood uric acid determination for gout. The least dependable of these tests is the antistreptococcal determination in rheumatic fever. The other three tests can be considered fairly reliable and practical in their clinical application. Not nearly enough use is being made of the streptococcus agglutination reaction in the diagnosis of rheumatoid arthritis. The author has found this test of great practical value in differential diagnosis. It seems fairly certain that streptococci of various types can be recovered not infrequently from the blood of patients with various acute infections and chronic constitutional disorders. In most instances they probably have little or no significance. In rheumatoid arthritis, however, streptococci can frequently be recovered from the blood, and positive streptococcus agglutination and precipitation reactions can be obtained in a high proportion of patients with the disease.

### Northwest Medicine, Seattle

35: 365-402 (Oct.) 1936

- Problems Confronting Us Today. D. F. Bice, Yakima, Wash.—p. 365.  
The Spectre of State Medicine. J. H. Crampton, Lewiston, Idaho.—p. 367.  
Acute Coronary Thrombosis. K. Winslow, Seattle.—p. 369.  
Influenza and the Common Cold. R. L. Cecil, New York.—p. 376.  
Diverticulum of Female Urethra. E. R. Hall, Vancouver, B. C.—p. 379.  
Carcinoma of Small Bowel: Case Reports. J. M. Bowers and B. P. Mullen, Seattle.—p. 380.  
Venereal Disease Control in Washington. W. R. Jones, Seattle.—p. 385.

### Ohio State Medical Journal, Columbus

32: 925-1048 (Oct. 1) 1936

- Chronic Ulcerative Colitis in Childhood. H. F. Helmholz, Rochester, Minn.—p. 941.  
Extra-Articular Disabilities of Shoulder Joint. R. S. Reich, Cleveland.—p. 946.  
Unusual Cases of Foreign Bodies in Food and Air Passages. H. E. Mitchell, Lakewood.—p. 950.  
\*Laparotrachelotomy: Clinical Appraisal, S. B. Conger, Akron.—p. 955.  
Preventive Procedures in Infancy. T. K. Selkirk and J. V. Greenbaum, Cincinnati.—p. 959.  
Relation of Insulin Requirement of Weight Increase in Diabetic Children. H. J. John, Cleveland.—p. 965.  
Modern Concept of Treatment of Malignancies with Radium. W. M. Millar, Cincinnati.—p. 967.  
Invasion of Female Generative Tract by *Ascaris Lumbricoides*: Case Report. R. Sterling, El Centro, Barranca-Bermeja, Colombia, South America.—p. 970.  
Postpartum Care of Uterine Cervix. J. I. Hofbauer, Cincinnati.—p. 971.  
Endocrine Obesity. H. A. Gusman, Cleveland.—p. 973.  
Possible Errors Which May Appear in Normal Electrocardiogram. J. E. Benjamin, H. Lederer and H. Landt, with technical assistance of N. Aronoff, Cincinnati.—p. 977.  
Akinesia Algira. L. A. Miller, Toledo.—p. 981.  
Hypertension in Child: Case Report. P. S. Ross, Columbus.—p. 983.

**Laparotrachelotomy.**—Conger believes that low cervical section is a much safer operation, especially in cases of potential infection. It allows a good trial of labor with comparatively little additional risk, thereby eliminating many unnecessary sections. Technically it is not a difficult operation, especially after a trial labor, when thinning of the lower segment and loosening of the uterovesical peritoneum make it a simple procedure. The numerous advantages over the classic justify the ten or fifteen extra minutes required for its performance. Patients delivered by low section are much more comfortable and are spared many grave complications attending classic delivery under the same conditions. Three of the author's patients had been delivered previously by classic sections. Following laparotrachelotomy, they were all favorably impressed by the greater comfort and smoothness of their convalescence. Low section is neither a cure-all for every case of dystocia nor a fool proof operation. Delivery of the septic patient by laparotrachelotomy will be as tragic as delivery by classic section. Patients with a temperature of 101 F. or higher should not be delivered abdominally. The history of long labor, ruptured membranes and careless vaginal examinations help in differentiating septic cases. Craniotomy in this type of case will reduce the maternal deaths. If this is refused, Porro section should be the method of abdominal delivery. The risk in the abdominal delivery in hemorrhagic cases is directly proportional to the time during which bleeding has been going

on. Refraining from vaginal examinations on prospective candidates for section will reduce the postoperative reaction even in delivery by laparotrachelotomy.

### South Carolina Medical Assn. Journal, Greenville

32: 229-252 (Oct.) 1936

- Some Bedside Observations on the Dying. R. P. Finney, Spartanburg.—p. 229.  
Mikulicz's Disease. T. R. Gaines, Anderson.—p. 232.  
Early Diagnosis of Acute Appendicitis. D. O. Rhame Jr., Clinton.—p. 233.  
Blood Transfusion. D. F. Adcock, Columbia.—p. 236.

32: 253-278 (Nov.) 1936

- Psychology of Subnormal Individuals. B. O. Whitten, Clinton.—p. 253.  
The Care of Acute Head Injuries. C. O. Bates, Greenville.—p. 260.  
Cardiac Pain. A. I. Josey, Columbia.—p. 263.

### Southern Medical Journal, Birmingham, Ala.

29: 953-1044 (Oct.) 1936

- \*Pain Syndromes in Upper Urinary Tract: Their Mechanisms and Clinical Management. L. D. Keyser, Roanoke, Va.—p. 953.  
Self-Inflicted Injuries in Civil Practice: Report of Fourteen Cases. D. Hart and R. Jones Jr., Durham, N. C.—p. 963.  
Demonstration of Ruptured Popliteal Aneurysm by Thorium Dioxide Arteriography. W. M. Yater, Washington, D. C.—p. 973.  
Myoma Malignum of Uterus: Report of Five Cases. L. T. Carl, Memphis, Tenn.—p. 976.  
Retroversion, Descensus and Deep Culdesac, with Suggested Improvement in Corrective Technic. O. J. Potthast, San Antonio, Texas.—p. 983.  
\*Gonorrheal Osteomyelitis of Vertebrae. R. A. Woolsey, St. Louis.—p. 990.  
Pyogenic Osteomyelitis of Pelvis: Clinical Summary of Ninety-One Cases. J. Kulowski, St. Joseph, Mo.—p. 994.  
Relationship of Maxillary Sinusitis to Infection in Contiguous Sinuses, Middle Ear and Lower Respiratory Tract. P. L. Mahoney, Little Rock, Ark.—p. 999.  
Some Clinical Aspects of Head Pain Associated with Sympathetic Phenomena. J. A. Brown, Houston, Texas.—p. 1002.  
Banana Therapy in Diarrheal Diseases in Infants and Children: Preliminary Report. C. L. Joslin, Baltimore.—p. 1007.  
Seborrhea and Its Effect on Ocular Diseases. M. T. Van Studdiford, New Orleans.—p. 1012.  
Four-Quarter System at the University of Tennessee. L. W. Diggs, Memphis, Tenn.—p. 1014.  
An Unusual Medicolegal Problem. A. P. Jones, Roanoke, Va.—p. 1021.  
House Dust Antigen in Allergy. A. G. Cazort, Little Rock, Ark.—p. 1022.  
Leukocyte Counts in Malaria: Analysis of 100 Cases. Eleanor Winthrop Townsend, Charleston, S. C.—p. 1026.  
Individual Chemoprophylaxis Against Malaria: Preliminary Report. M. E. Winchester, Brunswick, Ga.—p. 1029.  
Undulant Fever in Barren County, Kentucky. O. A. Beatty, Glasgow, Ky.—p. 1029.  
Uremia Following Blood Transfusion. O. C. Hansen-Pruss and B. N. Miller, Durham, N. C.—p. 1033.

**Pain Syndromes in Upper Part of Urinary Tract.**—Keyser takes the conservative course in dealing with pain syndromes and stasis mechanisms in the upper part of the urinary tract. The indwelling catheter or dilation with bulbs has in his experience given complete to partial symptomatic relief in from 60 to 80 per cent of a series large enough (167 cases) to warrant conclusions. He is certain that many of these patients would have been subjected to nerve-cutting operations and fixations by others and that in certain instances a greater degree of relief might have been obtained. Nevertheless, operative procedures in patients with unbalanced autonomic nervous systems are frequently unsatisfactory. Also he feels that the indwelling catheter and ureteral bougie, if used cautiously, will relieve or hold at a standstill many of these pathologic processes, so that surgery will become unnecessary. For this reason he contends that conservative ureteral dilation before resorting to surgery is a method worthy of trial, not necessarily on the basis of a high incidence of organic ureteral stricture but as a physical therapeutic attempt to readjust an unbalanced neuromotor dysfunction.

**Gonorrheal Osteomyelitis of Vertebrae.**—Woolsey reports the case of a man of 43 who was admitted to the hospital Aug. 9, 1934, giving a history of pain in the back six days previously. Physical examination was negative except for pain and slight tenderness in the upper lumbar region rather to the right of the midline. Urinalysis showed one plus albumin and many pus cells. The venereal history was negative. Roentgenograms of the lumbar spine showed moderate arthritic changes of hypertrophic type. There was no urethral discharge, nor did

pus in the urine show gonococci. Blood August 12 failed to agglutinate *Bacillus typhosus*, *Bacterium tularense*, *Brucella abortus* or *melitensis* or *Streptococcus viridans* and gave negative agglutination tests on three succeeding examinations. The last negative culture was reported on August 28. Cystoscopy was done the following day. The bladder, ureters and kidney pelvis were negative to plain roentgenograms and pyelograms. The temperature ran from about 100 to 104 F. for the first week and then dropped down about 1 degree. During this time most of the complaint was in the region of the right kidney and was much more pronounced when the patient turned over or lay on his right side. September 12 the author felt that he could detect a slight difference on the two sides, and thought of perinephric abscess. He introduced a needle on the right side and found pus and operated the following morning. Intracellular and extracellular gram-negative gonococci were found, and complement fixation for gonococci was plus four. The following morning roentgenograms demonstrated destruction of a large portion of the vertebra in contradistinction to the last picture taken ten days previously. Following the operation the temperature dropped perceptibly, the pulse rate remaining about the same. By September 25 the white count was 8,350 and the red count was 1,350,000 with a hemoglobin of 40 per cent. The patient was given a transfusion, which was followed by a chill and a temperature of 107 F., after which improvement was satisfactory. October 19, roentgenograms showed destruction of half of the second lumbar vertebra. From the time of operation the patient was carried on a Bradford frame until November 15, when a cast was applied in hyperextension, opening in the back for dressings. The temperature ranged to 100 F. each day. He complained of more or less pain in the region of the bladder and on micturition. By January 1 this became so pronounced that irrigations were made daily. January 9 the strictured urethra was dilated under cocaine, after which a retention catheter was left in place for a week with daily irrigations. Occasional constant drainage for a few days and irrigations almost daily were necessary until April 1. May 7 a Taylor brace was applied and the patient was allowed to sit up. In a short time he was getting around very nicely. He left the hospital June 16, 1935, with very little fever and a normal blood picture. September 17, gonococcus complement fixation was still four plus.

### Tennessee State Medical Assn. Journal, Nashville

29: 337-376 (Sept.) 1936

- Study of Toxemias of Late Pregnancy. E. G. Wood, Knoxville.—p. 337.  
Hyperparathyroidism with Renal Calculus. S. S. Riven and M. F. Mason, Nashville.—p. 345.  
Impacted Dental Plate in Larynx: Removal by Suspension. E. L. Myers, St. Louis.—p. 355.  
Polioomyelitis. J. B. Wright, Lynnville.—p. 357.

### Texas State Journal of Medicine, Fort Worth

32: 381-444 (Oct.) 1936

- Relief of Pain During Childbirth. L. M. Randall, Rochester, Minn.—p. 385.  
\*Infant Mastoiditis: Its Management, with Particular Reference to X-Ray Diagnostic and Therapeutic Possibilities. C. F. Crain and J. M. Sloan, Corpus Christi.—p. 388.  
Reactive Blood Cells in Acute Infections. M. P. Neal, Columbia, Mo.—p. 397.  
Paroxysmal Hemoglobinuria: Case Report. S. J. Lewis and T. A. Fears, Beaumont.—p. 403.  
Connell Cancer Treatment: Its Present Status. C. Phillips, Temple.—p. 406.  
Antrums and Certain Persistent Headaches: Consideration of Sluder Syndrome in Particular. C. B. Williams, Mineral Wells.—p. 408.  
Mobile Colon. A. Small, M. O. Rouse and C. O. Patterson, Dallas.—p. 410.  
\*Prolonged Continuous Sleep Treatment: Its Results in Psychiatry, with Discussion of Its Place in Modern Medicine. G. W. Day, Galveston.—p. 417.  
Some Child Behavior Problems. L. O. Godley, Fort Worth.—p. 422.  
Agranulocytic Angina. W. J. Stork, Galveston.—p. 427.

**Diagnostic and Therapeutic Possibilities of Roentgenology in Infant Mastoiditis.**—Crain and Sloan present twenty cases of infant mastoiditis that stress the diagnostic possibilities of roentgenology and present the possibilities of roentgen therapy. The percentage of mortality in the cases presented is much less than that reported for surgery or non-surgical cases. All patients were less than 26 months of age,

and all had roentgen evidence of mastoid infection. Relatively fewer infants have been operated on for mastoiditis by the authors since roentgen therapy has been tried. The roentgenogram of an infant mastoid will show a fairly constant type of development for a given age. The semicircular canals which are visible in the younger infant begin to lose their identity as age progresses. The antrum is often not visualized, owing to presence of embryonic tissue within it, but its form is generally outlined to some degree. There is no cellular development, but there is a distinctly outlined "premastoid" area visible posteriorly and inferiorly from the antrum. This area is composed of cancellous bone, which shows the trabeculations observed in other cancellous bone. It is roughly triangular, but as development progresses it assumes a spherical or ovoid outline. The lateral sinus is not normally visible in the infant mastoid. When infection takes place in the middle ear of an infant, it easily finds a pathway to the antrum, from which point it can readily infect the cancellous tissue of the pre-mastoid area. When the infection is confined to the antrum, it may be possible to demonstrate a definite cloudiness of this area. A comparison with the opposite side is essential, as the normal antrum may be cloudy. If the infection involves the cancellous "premastoid" area, there are visualized changes, which in this structure are comparable to the changes that may be observed in the pneumatized mastoid. There may be a haziness of the region; the trabeculae may be fuzzy, thickened or absorbed. As the infection progresses, there is absorption of bone and the lateral sinus becomes visible, a positive sign of destruction in the infant mastoid. Roentgen irradiation is beneficial, is often curative, and has a definite place in the treatment of this condition. The benefits of radiation therapy in infant mastoiditis arise from the direct action of radiation on acute infections and from its indirect effect on the pathologic process by the production of drainage. Embryonic tissue is extremely radio-sensitive, and it is reasonable to suppose that sufficient dosage of x-rays will cause a shrinking of this tissue and will, in fact, produce a nonsurgical drainage of this area. Collections of adenoid tissue about the pharyngeal opening of the eustachian tube may also block drainage. Lymphoid tissue is also radio-sensitive and it is possible that this will shrink and promote adequate drainage from the middle ear.

**Prolonged Continuous Sleep Treatment.**—Day employed the prolonged continuous sleep method of Witt and Cheavens in treating various cases of mental disorders. Each drachm of the standard sleep mixture contains 1 grain (0.065 Gm.) of phenobarbital sodium and 5 grains (0.3 Gm.) of barbitol sodium dissolved in peppermint water and colored red. Two drachms (8 Gm.) of this mixture is usually given every four hours until sleep has been induced, then 1 drachm (4 Gm.) often enough to maintain the desired state of somnolence, which varies usually from one to six times in twenty-four hours. Fecal impactions are guarded against by a daily soapsuds enema, magnesium sulfate once a week, and two or three ounces of vegetable oil. Attention to food is second only to caution against barbitol poisoning in these patients. They eat much better when undergoing continuous sleep treatment, and, while they have to be spoon fed, much patience and time are devoted in giving them nourishing food, of a nonresidue character. In cases of serious emaciation, persistent vomiting or unusually severe agitation the patient is rendered completely comatose and tube fed two or three times a day. Tube feedings consist of milk, eggs, sugar, salt, vegetable oil, tomato juice and brewers' yeast, about 1,800 cc. daily, containing from 2,300 to 3,000 calories. After this type of therapy, manic and depressed patients awake, almost without exception, refreshed and rested, with a considerable gain in weight and a completely new outlook on life. This improvement usually progresses to complete recovery in a short time. Schizophrenic and involutional psychotic patients frequently show the same type of improvement for from three to ten days and then begin to regress. Patients having involutional melancholia, hysteria, anxiety states or maladjustments show very little improvement. The results are so uniform that one can almost make a diagnosis by the patient's course after continuous sleep treatment. Hysterics are not nearly so uniform. The average duration of sleep was 20.4 days, the shortest being three days and longest seventy-eight days. The author believes that in manic

patients the elevation of mood leads to an extravaganza of ideas and both lead to greatly increased motor activity. Increased motor activity stimulates an increase of mental activity and thus a vicious circle of cause and effect is developed. Sleep breaks this vicious circle. It is also probable that the undernourishment and cerebral impoverishment which result from lack of food and increased psychomotor activity further aggravate the mental aberration, producing another vicious circle, which is interrupted by the increased food intake and reduced activity under continuous sleep treatment. The depressed patients seem to derive their beneficial results from the long respite from their unhappy, melancholy thoughts. Involuntional depressions seem to derive somewhat the same result, although the author is convinced that involuntional psychoses are organic, probably endocrine, in origin rather than purely affective. In schizophrenia the disorder is one of intellect. Therefore nothing more than transitory improvement due to temporary relief from thinking can be expected.

### Virginia Medical Monthly, Richmond

63: 395-458 (Oct.) 1936

- Function of State Bureau of Mental Hygiene. J. N. Williams, Richmond.—p. 395.  
Treatment of Fractures of Hip by Use of Smith-Petersen Pin. M. A. Johnson Jr., Roanoke.—p. 397.  
Extensive Vesicovaginal Fistula with Uretero-Intestinal Anastomosis: Case Report. E. S. Groseclose and H. H. Hurt, Lynchburg.—p. 405.  
Tuberculosis Education: How Far Have We Progressed? W. F. Wild, Mamie H. Jackson and Verna McGurman, Suffolk.—p. 408.  
Cancer of Tongue: Some Etiologic Considerations: Report of Case with Stone in Wharton's Duct as Cause. C. W. Trexler, Honolulu, Hawaii.—p. 412.  
Secondary Anemias and Their Treatment. G. L. Weller Jr., Washington, D. C.—p. 415.  
Tuberculous Peritonitis Due to Bovine Type from Same Farm: Report of Two Cases. M. H. Harris, West Point.—p. 418.  
Unusual Case of Stricture of Esophagus. E. U. Wallerstein, Richmond.—p. 420.  
Dedication to Students in Medicine. T. C. Merrill, Paris, France.—p. 423.  
Proposed Immunization Program. A. B. McCreary, Eastville.—p. 426.  
Auricular Fibrillation: Clinical Significance. H. Golston, Roanoke.—p. 428.

### Western J. Surg., Obst. & Gynecology, Portland, Ore.

44: 563-618 (Oct.) 1936

- Overlooked Common Duct Stone. H. K. Bonn, Los Angeles.—p. 563.  
Reconstruction of Voluntary Anal Sphincter. T. F. Mullen, San Francisco.—p. 567.  
Cervical Rib and Anterior Scalene Syndrome. P. G. Flothow, Seattle.—p. 570.  
Couvulaire Uteroplacental Apoplexy with Complete Separation of Placenta and Concealed Hemorrhage. M. J. Abramson, Los Angeles.—p. 575.  
Paraffin Dressing for Transplanted Grafts. D. V. Trueblood, Seattle.—p. 578.  
Response of Exophthalmic Goiter or Graves' Disease to Irradiation of Pituitary and Adrenals. J. H. Hutton and E. E. Madden, Chicago.—p. 579.  
Goiter in Georgia: Statistical Study of 542 Cases. T. C. Davison and D. H. Poer, Atlanta, Ga.—p. 587.

**Cervical Rib and Anterior Scalene Syndrome.**—Flothow has recently seen several patients in whom the symptoms of brachial plexus irritation have been due to anatomic anomalies of the supraclavicular triangle. The anterior scalene muscle by virtue of its relation to the first rib and the brachial plexus and subclavian artery may produce symptoms similar to those of cervical rib. Treatment of the condition, the anterior scalene syndrome, is section of the anterior scalene muscle. The operation of tenotomy of the anterior scalene muscle has replaced that of resection of cervical ribs which are causing symptoms. This operation is much safer, is unaccompanied by unfavorable postoperative sequels and gives more satisfactory results than resection of the rib. Four cases are presented: one of definite cervical ribs, one of rudimentary nubbins of ribs and two of the anterior scalene syndrome in which tenotomy of the anterior scalene muscle has been performed. In the one case with definite cervical ribs the result has not been very satisfactory. The history was atypical and it is probable that the ribs were not causing all the symptoms of which the patient complained. There has been some improvement, but many of his complaints persist. In the three cases without cervical ribs the results have been excellent.

### FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

### British Journal of Dermatology and Syphilis, London

48: 473-526 (Oct.) 1936

- Pyrethrum Dermatitis. J. H. Sequeira.—p. 473.  
Relation of Water Metabolism to Experimental Skin Infections. G. V. Kulchar and H. E. Alderson.—p. 477.  
Pemphigus Neonatorum. A. K. Bowman.—p. 484.  
Intravenous Injections of Charcoal in Treatment of Skin Disease. E. Davis.—p. 491.

### British Journal of Ophthalmology, London

20: 561-608 (Oct.) 1936

- The Eye in Leprosy. E. F. King.—p. 561.  
Inheritance of Opaque Nerve Fibers in Retina (Papilla Leporina). E. A. Cockayne.—p. 569.  
Results of Intra-Ocular Inoculation of Trachoma (on Question of "Follicle-Building Agent" of Von Szily). P. Kiewe.—p. 576.

### British Journal of Radiology, London

9: 631-694 (Oct.) 1936

- Influence of X-Radiation on Stability of Ferric Oxide Sol. J. A. Crowther, H. Liebmman and C. C. Mills.—p. 631.  
\*Radiology of Facial Bone Fractures. H. G. Hodgson.—p. 637.  
Three Radiographic Zones of Simple Pleural Effusions. J. Kaunitz.—p. 644.  
Testing and Measurement of Radium Containers at the National Physical Laboratory. W. E. Perry.—p. 648.  
Malignancy in Skin. J. F. Bromley.—p. 659.  
Radical X-Ray Treatment of Carcinomas. R. Paterson.—p. 671.  
Spectral Distribution in Continuous X-Ray Spectrum and Specification of X-Ray Quality. G. E. Bell.—p. 680.  
Photographic Action of Radium Gamma Rays. G. E. Bell.—p. 688.

**Radiology of Facial Bone Fractures.**—Hodgson asserts that the most certain method of recognizing fractures of the facial bones is roentgenologic, but, unless the examination is carried out with a full knowledge of the anatomy of the parts and the mechanics of this type of fracture, the injury may even then escape notice. The roentgenologist has to take into account the direction of the force, visualize the plane of the possibly resulting fracture and take roentgenograms so as to view it tangentially, and with the correct degree of roentgen penetration to throw the particular bone or bones concerned into relief. The stereotyped anteroposterior and lateral roentgenograms of the skull will show one little or nothing of this type of injury, and special views have to be taken with this particular object in view. In fractures of the nasal bones the axial view is taken with the chin resting on the film and the head thrown back at an angle of 30 degrees with the horizontal, the tube being tilted 30 degrees toward the feet. This causes the central ray to pass axially down the nose, giving one an "end on view." In fractures of the malar bones only by directing the rays at right angles to the line of force, as described in the axial view of the nasal bones, can one see that the lower orbital margin has been fractured through the foramen and the whole of the malar portion displaced bodily backward into the antrum. The best view to show fractures of the zygoma is the verticomental view, the rays being centered at right angles to the vertex. Fractures close to the symphysis are often concealed in an anteroposterior view, as the shadow of the cervical spine is superimposed. They are best shown by rotating the patient's head slightly to one side and directing the rays obliquely upward on to the film. A fracture of the horizontal ramus is best shown by directing the rays obliquely upward, so as to throw the uninjured jaw clear of the injured side. The temporomandibular joint is well seen if the head is placed in the lateral position, with the injured side against the film and the rays directed downward at an angle of 30 degrees.

### East African Medical Journal, Nairobi

13: 163-196 (Sept.) 1936

- Controlled Experiment in Medicine. W. A. Wilson.—p. 164.  
Tropical Diseases of the Southern Sudan: Their Distribution and Significance. A. Cruickshank.—p. 172.  
Significance of Trachomatous Conjunctivitis. R. Y. Stones.—p. 177.  
Human Rabies in the Central Province of Tanganyika: Case. D. E. Wilson and H. Singh.—p. 185.

**Edinburgh Medical Journal**

43: 609-656 (Oct.) 1936

- Clinical Recollections and Reflections: VI. Remarks on Symptom of Cough in Relation to Chronic and Acute Illness in Childhood. C. McNeil.—p. 609.
- So-Called Spontaneous Arachnoid Hemorrhages. K. H. Bouman.—p. 618.
- Some Modern Problems Connected with Cerebrospinal Fluid. J. G. Greenfield.—p. 622.
- Observations on Primary Lung Carcinoma. M. El Gazayerli.—p. 636.
- The Problem of the Industrial Cripple, Surveyed Especially in the South-east of Scotland. D. S. Middleton.—p. 641.

**So-Called Spontaneous Arachnoid Hemorrhages.**—Bouman believes that subarachnoid hemorrhages caused by leakage from aneurysms, called spontaneous because the underlying cause is unknown, are comparatively frequent. The conditions that favor the origin and growth of such aneurysms are discussed. Apart from cases in which in advanced age arteriosclerotic changes of the vessels are evident, cases showing precedent syphilitic infection or those in which an injury of the skull has brought about a rupture of the blood vessels, so-called spontaneous hemorrhages in young and otherwise healthy persons are difficult to account for. Such bleedings in young persons are usually supposed to be due to some developmental defect, but this defect cannot be—in the author's opinion—a so-called congenital weakness of the vessel wall. He is convinced that there must be another cause behind all this to explain that weakness and the eventual rupture. This ultimate cause may be the real congenital factor. Ruptured aneurysms in young persons are mostly—at least in his postmortem cases—accompanied by a variation in the ramifications of the blood vessels. The frequency of this anomaly is undoubtedly much greater than in other varieties of brain disease. These variations in the ramifications of the circle of Willis are mostly of the same type. This coincidence of congenital variations and spontaneous bleedings cannot be accidental. If this is right, he believes that one must conclude that in the case of such anomalies the conditions of the blood currents in the circle of Willis have changed completely and that the normal static and dynamic conditions are disturbed greatly. If the normal communication between the basilar artery and the arteria cerebri posterior is blocked (or almost blocked) on one side, the whole current is led through the arteria communicans posterior on the other side. But this relatively small vessel is also subjected to the high pressure of the internal carotid. The effect can only be that two mighty currents of the blood circulation meet together in this small vessel, originally not built to resist these currents. Moreover, this particular vessel is subjected to the entirely opposed currents of the internal carotid and the basilar artery. As soon as the wall is weakened by the perpetual currents, an aneurysm may easily be formed and increased by whirlpools made by these directly opposed currents. Hence the "supposed weakness" of the vessel wall. There can be only one end of this process, viz., the so-called spontaneous rupture of the vessel. In this way the arachnoid bleedings in young and otherwise healthy persons may be satisfactorily accounted for.

**Glasgow Medical Journal**

8: 201-264 (Oct.) 1936

- Trigeminal Neuralgia: Review. J. E. Paterson.—p. 201.
- Urea Clearance Test of Van Slyke. G. L. Montgomery.—p. 212.
- Smooth Muscle Tumors of Prostate: Report of Three Cases with Mention of Similar Growths of Bladder and Epididymis. J. F. Heggie.—p. 223.

**Indian Medical Gazette, Calcutta**

71: 501-564 (Sept.) 1936

- Experience with Cancer of Larynx, Pharynx and Adjoining Regions. V. M. Kaikini.—p. 501.
- Infantile Eczema. G. Panja.—p. 506.
- Enteric Fever in Vizagapatam. N. G. Pandalai.—p. 511.
- Vaccine Treatment of Typhoid. C. Krishnaswamy Rau and M. P. Krishna Rao.—p. 513.
- Sodium Mandelate in Treatment of Bacillus Coli Infection. P. Ganguli.—p. 516.
- X-Ray Appearances Seen Twenty-Four Years After Healing in Case of Extensive Tuberculosis of Lung. G. C. Chatterjee.—p. 517.
- Dermal Leishmaniasis in China. Y. T. Yao and C. Jung Sun.—p. 519.
- Experimental Studies on Atabrine. F. Mietzsch, H. Mauss and G. Hecht.—p. 521.

**Vaccine Treatment of Typhoid.**—Krishnaswamy Rau and Krishna Rao state that they have recorded as high as 84 per cent of success in cases in which intravenous triple vaccine was

started in the first week of illness. On the other hand in late second week cases, when the patient is in a state of toxemia with signs of toxic myocarditis, they hesitate to give triple vaccine intravenously for the obvious reason that the shock produced might be followed by unfavorable results. In such cases they prefer giving the vaccine intramuscularly; some respond well, others do not show much reaction. This explains the lower percentage of success in their series of second week cases. Thus triple vaccine given intramuscularly has its own advantage and it is not too much to infer that it presents complications both early and late, clears the toxemic condition quickly, improves the general condition of the patient and brings about a modification in the range of temperature, though it may not cut short the course of the fever in all cases. The average adult dose varied from 50 to 100 million organisms intravenously and from 100 to 200 million organisms intramuscularly. The dose usually employed in children between 8 and 12 years of age is 50 million organisms intravenously. The dose and the route of administration have to be determined in each case by taking into consideration the degree of toxemia, the day of the disease, the condition of the myocardium, the temperature, the age and the general condition of the patient.

**Journal of Laryngology and Otology, London**

51: 619-682 (Oct.) 1936

- Report on 891 Consecutive Cases of Acute Middle Ear Suppuration and Mastoiditis with Intracranial Complications in 139 Cases During the Period 1920-1934. J. S. Fraser and G. C. Halliday.—p. 619.
- Some Remarks on Suppuration in Parapharyngeal Space. R. Schroeder.—p. 631.

**Journal of Mental Science, London**

82: 291-474 (July) 1936

- \*Bodily Complaint: Study of Hypochondriasis. F. Brown.—p. 295.
- Memory and Its Disorders in Relation to Crime. H. A. Grierson.—p. 360.
- \*Hematology of Convulsions. A. Guiridham.—p. 371.
- Superficial Abdominal Reflexes. E. F. Skinner.—p. 394.
- Serum Calcium in Prolonged Narcosis. T. J. Hennesly and E. D. Yates.—p. 411.
- Narco-Analysis. J. S. Horsley.—p. 416.
- Somnifaine Narcosis: Clinical Aspects. A. MacNiven.—p. 423.
- Id.: Psychologic Aspects. J. H. MacDonald.—p. 429.
- Id.: Biochemistry. J. H. Quastel.—p. 431.
- Id.: Pathology. W. M. F. Robertson.—p. 433.

**Study of Hypochondriasis.**—Brown regards hypochondriasis as a reaction of the individual to a difficulty rather than as a disease. The incidence of body complaints in the 226 admissions in 1934 to the Phipps Clinic was 45 per cent. The nature and etiology of the body complaints is discussed in forty-one cases showing hypochondriasis in anxiety and obsessional states, hysteria, invalid, schizophrenic and depressive reactions. These body complaints were classified mainly on a basis of affect and attitude to illness into psychoneurotic or mergergic hypochondriasis, schizophrenic or parergastic types of hypochondriasis and depressive hypochondriasis. A great difficulty of this problem lies in defining the meaning of the emotional states, such as depression, anxiety, fear and tension, and in deciding what are the physical accompaniments. It is probable that the body complaints in all these conditions are related, and some kind of classification is necessary to understand and treat the psychogenic body complaint, which seems to have as many ramifications and complexities as the physical body complaints, which are the province of organic medicine.

**Hematology of Convulsions.**—Guiridham studied the hematology of eight epileptic patients and two control subjects. The individual observations were continued for a period of from twenty-one to sixty-four days. A definite hemocytic variation was observed with the incidence of the convulsions. It is not, however, uniform in tendency in all cases, which seems to indicate that there are characteristic pathologic variations for epileptic patients but not for epilepsy. The white cell count is markedly variable in epilepsy, its greatest variability being at the time of the convulsion. There is a definite leukocytosis associated with the occurrence of fits. It is due, in practically all cases, to a relative increase in the lymphocytes. Eosinophilia, traditionally associated with epileptic convulsions, occurred but rarely. Eosinophilia is found in that minority of cases in which the increased white count, associated with fits, is due to the polymorphonuclears. When fits occur in

groups, there is a tendency for a low count to be associated with a period of fits. The red cell count and hemoglobin percentages vary, in association with the convulsions, but to a less degree than the leukocytes. There is an increase in the erythrocyte count at the time of the fits. This may or may not be accompanied by an increase in the hemoglobin percentage. There appears to be no very definite relation between the type of cell count and the degree of frequency of the fits. No real evidence of a daily leukocyte tide was afforded by a study of the control subjects, or of the epileptic patients in a quiescent phase.

### Journal of Physiology, London

87: 311-428 (Sept. 8) 1936

- Limiting Rate of Assimilation of Glucose Introduced Intravenously at Constant Speed in Resting Dog. M. Wieruchowski.—p. 311.  
 \*Normal Leukocyte Picture in Hot Climate. W. P. Kennedy and I. Mackay.—p. 336.  
 Heart Rate of Sympathectomized Dog in Rest and Exercise. L. Brouha, W. B. Cannon and D. B. Dill.—p. 345.  
 Role of Duodenal Regurgitation in Automatic Regulation of Gastric Acidity. C. Bolton and G. W. Goodhart.—p. 360.  
 Maternal Transference of Fluorine. Margaret M. Murray.—p. 388.  
 Reactions of Normal Mammalian Muscle to Acetylcholine and to Eserine. G. L. Brown, H. H. Dale and W. Feldberg.—p. 394.  
 Antagonism Between Curarine and Acetylcholine. Grace Briscoe.—p. 425.

**Normal Leukocyte Picture in Hot Climate.**—Investigations of the polymorphonuclear count of European and indigenous populations in Irak showed a marked shift to the left. This directed the attention of Kennedy and Mackay to the differential count, and it was found that the blood picture in normal persons in Irak differed from the standards given in all the textbooks of tropical medicine available to them. These, indeed, were similar to the figures found in the best known manuals of histology, pathology and medicine. Physiologic standards were necessary for the furtherance of other researches. Differential white cell counts and polymorphonuclear indexes of 271 British airmen and twenty-nine Irak medical students, under subtropical conditions, are presented and analyzed. Evidence of bone marrow stimulation appears to be afforded by deviation of the polymorphonuclear count, the frequency of "abnormal" cells and the high total count. A left-handed polymorphonuclear index could result from increased removal from the circulation, and this is probably a factor, but there is no evidence that it is operating alone. If it did, an unstable state would result, and on the contrary an equilibrium was demonstrated by the similarity of repeated counts in random individuals, the absence of double maximums in any count and the nonoccurrence of leukopenia. The very high figures obtained for monocytes indicate that these cells are more sensitive to the hematopoietic stimulus at work than the granulocyte series or that they are more resistant to the probable increased removal of white cells from the blood stream, or both. In certain pathologic conditions, e. g., phlebotomus fever, much higher monocyte counts were found. The possible causes are discussed, and it is concluded that the climate is most probably responsible.

88: 1-112 (Oct. 16) 1936

- Actions of Antidromic Impulses on Ganglion Cells. J. C. Eccles.—p. 1.  
 Carbamino Compounds of Carbon Dioxide with Human Hemoglobin and Their Role in Transport of Carbon Dioxide. J. K. W. Ferguson.—p. 40.  
 Genesis of Respiratory Movements in Fetus of Sheep. J. Barcroft and D. H. Barron.—p. 56.  
 \*Dietary Deficiency, Nerve Lesions and Dental Tissues. J. D. King.—p. 62.  
 Double Motor Innervation of Adductor Muscle in Claw of Crayfish. A. van Harreveld and C. A. G. Wiersma.—p. 78.  
 Action of Progesterone on Uterus of Rabbit and Its Antagonism by Estrone. J. M. Robson.—p. 100.

**Dietary Deficiency, Nerve Lesions and Dental Tissues.**—King compared the effects of resection of certain nerves with those due to vitamin A deficiency. The vasomotor system exerted an influence on the growth of the teeth. In dogs receiving diets deficient in vitamin A the eruption of teeth was delayed, hypercementosis occurred and the laminae durae and bone of the tooth sockets were malformed and the alignment of the incisor teeth was irregular, in addition to periodontal and nervous defects. When the inferior dental nerve was resected on one side, the eruption of teeth in dogs and

the growth of teeth in rabbits was accelerated and the alignment of the incisor teeth was irregular; but no defects in the dental or periodontal tissues were found. As similar changes were observed on resection of the cervical sympathetic, the effects of severing the inferior dental nerve are regarded as due to damage to vasomotor fibers in it.

### Journal of State Medicine, London

44: 497-558 (Sept.) 1936

- Classification of Rheumatic Diseases. A. G. T. Fisher.—p. 497.  
 \*The Spa in Treatment of Rheumatic Diseases. C. W. Buckley.—p. 508.  
 Treatment of Chronic Rheumatism in the Town Clinic. W. S. C. Cope.—p. 517.  
 Organization of Clinic for Chronic Rheumatism. T. J. O'Reilly.—p. 521.  
 Inspection of Canned Foods. C. White.—p. 530.  
 Demonstration of Tubercle Bacilli in Milk by Cultural Method. T. Ruddock-West and F. T. Alpe.—p. 543.  
 Differentiation of Coli and Aerogenes Group of Coliform Organisms. R. G. Harry.—p. 546.

**The Spa in Treatment of Rheumatic Diseases.**—Buckley points out that one of the most important features of treatment at a spa, whether in a hospital or privately, is the combination of rest and recreation in health-giving climates and attractive surroundings. This is of the utmost importance, which must always give to the spas advantages over treatment in large centers of population. Some consideration must be given to the difference in the effect of the various mineral waters. The analysis of a water throws but little light on its therapeutic action and one must depend largely on clinical observation supplemented by the work of the biochemist. The effect of a course of mineral water drinking may be due to purgation, cleansing the intestinal tract and removing toxins: this will be the effect of the strong sulfur and saline waters; to diuresis associated with flushing of the tissues generally or, perhaps vaguely, to stimulation of metabolism, of which there is both clinical and experimental evidence. In most rheumatic conditions, however, the external use of water in the form of baths, douches and other methods is generally considered to be the more important. The effects are due to thermal, mechanical and chemical action. Thermal effects will be the same whatever the character of the water employed and will influence rheumatic conditions by improving the flow of blood especially in the cutaneous vessels and at the periphery. Mechanical effects, while produced equally by plain water when used for douches, will in baths depend on the nature of the water, the strongly saline and the gaseous waters producing definite effects peculiar to themselves, and these merge with the chemical effects. Physical treatment, of which spa methods are one of the principal forms, must always be of the utmost importance in the treatment of rheumatic diseases.

### Journal of Tropical Medicine and Hygiene, London

39: 221-232 (Oct. 1) 1936

- Immunization Against Trypanosomiasis: Third Contribution. C. Schilling.—p. 221.  
 Medical Organization and Health of Italian Troops During Ethiopian War: Notes. A. Castellani.—p. 222.

### Lancet, London

2: 775-832 (Oct. 3) 1936

- Development of Thoracic Surgery. F. Sauerbruch.—p. 775.  
 \*Botulism: Case. R. S. Aitken, B. Barling and A. A. Miles.—p. 780.  
 \*"Specific" and Nonspecific Treatment of Boils, with Especial Reference to Results of Treatment by Staphylococcus Toxoid. R. Klaber.—p. 784.  
 Palpitation. Doris M. Baker.—p. 787.  
 Idiopathic Steatorrhea with Multiple Nutritional Deficiencies: Case. H. W. Fullerton and J. A. Innes.—p. 790.

**Botulism.**—In the case of Aitken and his associates bacteriologic examination of the suspected food—an open meat pie—confirmed the diagnosis and yielded a strain of *Clostridium botulinum* producing a type B toxin. This is the first recorded instance of a type B strain producing botulism in England. The potency of the toxin it produced in the pie was evidently high. The strain grows poorly and is feebly proteolytic and saccharolytic. Its anaerobic growth is greatly improved by the addition of 10 per cent carbon dioxide to the atmosphere in the jar, and it is suggested that incubation in this atmosphere be included in the routine procedure for the isolation of *Clostridium botulinum*. The type B strain isolated is

toxinogenic in relatively dry mincemeat, exposed even more freely to air, without the aid of symbiotic aerobes that is usually postulated as a necessary factor in the aerobic growth of *Clostridium botulinum* under domestic conditions.

**"Specific" and Nonspecific Treatment of Boils.**—Klaser asserts that the continued recurrence of boils is dependent in most cases on underlying factors. Treatment directed toward the removal of such conditions is therefore not only rational but usually highly successful. It consists of the removal of local sources of mechanical friction and secondary reinfection (hot fomentations, mechanical appliances, infected clothing), the removal of substances obstructing the opening of the follicles (dirt, oil, acne comedones), the treatment of septic foci (dental abscess, antral infection), the treatment of underlying cutaneous disorders (acne vulgaris, seborrhea, lichen urticata, eczema, scabies, pediculosis, pruritus) and the treatment, when present, of hyperglycemia, anemia, malnutrition and the like. Some cases appear to be associated with anxiety or "overwork." It is often impossible to separate the physical and psychologic factors concerned. Increased fresh air and sunshine or a long holiday may be followed by remissions. So many cases, however, improve following general ultraviolet irradiation that it seems probable that the immunity of the skin to the staphylococcus is in some way increased by the treatment. Roentgen treatment is of great value in the case of axillary boils and those confined to the face, neck and other areas commonly affected by acne vulgaris. This is the most reliable method of diminishing the excessive sebaceous and horny secretions responsible for these conditions. The retention of these products in the follicles invites recurrent infection by the staphylococcus. The virtue of any "specific" treatment for recurrent boils is peculiarly difficult to assess, owing to the irregular character of this affliction. The reinvestigation of seventy-nine cases treated by nonspecific methods (especially general ultraviolet irradiation and x-rays) from two to three years earlier indicated serious persistence in only three cases, in which there was an underlying chronic skin disorder. The results obtained by the use of toxoid in twenty cases of sycosis and thirteen cases of boils were not sufficiently encouraging to justify a continued trial. The injection of staphylococcus toxoid constantly increased the circulating antihemolysin. There was no evidence, however, that this increase had any clinical value.

### Medical Journal of Australia, Sydney

2: 381-414 (Sept. 19) 1936

- Intracranial Aneurysms. E. G. Robertson.—p. 381.  
\*Observations on Metabolism of Calcium and Phosphorus in Three Cases of Acromegaly, One Showing Osteoporosis. L. B. Cox and Isobel M. McPhee.—p. 390.  
Inductotherm. E. P. Dark.—p. 397.

**Metabolism of Calcium and Phosphorus in Acromegaly.**—Cox and McPhee observed no disturbance in the metabolism of calcium or of phosphorus in three cases of acromegaly. Case 1 is advanced and almost certainly nonprogressive, showing a marked general osteoporosis and resembling the type encountered in certain cases of hyperparathyroidism. Case 2 is early and probably progressive, showing no osteoporosis. Case 3 is advanced and progressive, also showing no osteoporosis. The two advanced cases both show the usual bony changes of their disease in that the bones have increased in size, have widened by the laying down of new bone beneath the periosteum, and many new bony formations are present. In case 1 the bones, having attained the usual contour of those found in acromegaly, yet have undergone rarefaction. Thus the calvarium, which is much increased in width, is definitely rarefied and has not the density usual in acromegaly. The thickened cortices of the long bones have undergone a similar rarefaction, a process that has extended even to the osteophytes. Thus it is the progressive case which shows the usual increase in density of bone, while the nonprogressive case shows rarefaction. It is suggested that a deficiency of calcium in the diet may have resulted in a call being made on the bony tissues. A generalized decalcification of bone is known to occur in thyrotoxicosis. No evidence of thyrotoxicosis was observed. In the light of such knowledge as is possessed as to the causes of generalized osteoporosis, it would seem likely that the decalcification has resulted from some imbalance of the endocrine glands. The biochemical investigations do not support this interpretation. In view of

the association of the parathyroid secretion with the mobilization of calcium, the possibility must be considered that in case 1 the parathyroids were overactive either intermittently or continuously and that this aberrant function could not be detected by the biochemical methods used. Furthermore it is possible that, while hyperfunction of the parathyroids may have been present during the progressive phase of the pituitary tumor, a normal state may have existed during the retrogression of the latter. Moreover, it cannot be dogmatically stated that the secretions of the pituitary and parathyroids are alone necessary for the mobilization of calcium. Knowledge of the exact chronic state in which calcium exists in the blood and tissue fluids is far from complete.

### Practitioner, London

137: 393-664 (Oct.) 1936

- Medical Progress 1935-1936. M. Cassidy.—p. 393.  
Surgical Progress 1935-1936. D. Wilkie.—p. 399.  
Diseases of Alimentary Canal. A. F. Hurst.—p. 409.  
Acute Abdominal Disease. V. Z. Cope.—p. 423.  
Cardiovascular Disorders. W. Evans.—p. 441.  
Diseases of Blood Forming Organs. J. F. Wilkinson.—p. 453.  
Diseases of Lungs and Pleurae. M. Davidson.—p. 467.  
Nervous Disorders. M. Critchley.—p. 477.  
Psychologic Medicine. H. Devine.—p. 481.  
Rheumatic Diseases. C. W. Buckley.—p. 491.  
Tropical Diseases. N. H. Fairley.—p. 501.  
Acute Infectious Diseases. W. Gunn.—p. 513.  
Allergic Diseases. G. W. Bray.—p. 531.  
Endocrine Disorders. H. Gardiner-Hill.—p. 545.  
Obstetrics and Gynecology. D. MacLeod.—p. 554.  
Diabetes Mellitus. O. Leyton.—p. 569.  
Renal Disease. T. I. Bennett.—p. 576.  
Inoperable Cancer. J. Hosford.—p. 581.  
Ophthalmology. R. A. Greeves.—p. 589.  
Otorhinolaryngology. V. E. Negus.—p. 596.  
Orthopedic Surgery. E. W. H. Groves.—p. 609.  
Diseases of Children. A. Moncrieff.—p. 619.  
Anesthesia and Analgesia. F. B. Parsons.—p. 630.  
General Practice: No. IV. Medical Ethics. C. O. Hawthorne.—p. 646.

### South African Medical Journal, Cape Town

10: 625-652 (Sept. 26) 1936

- Trachoma Problems. D. J. Wood.—p. 629.  
Early History of Medicine. L. Klein.—p. 633.  
Virus of Muscular Rheumatism. H. Hüsserl.—p. 636.  
Retroflexion of Uterus. L. J. te Groen.—p. 637.  
Impressions on Visiting Dermatologic Clinics in London and Vienna. L. E. Ellis.—p. 639.

### Tubercle, London

1S: 1-48 (Oct.) 1936

- Clinical Treatment and After-Care. W. Bronkhorst.—p. 1.  
The Potts Memorial Hospital, Livingston, New York. H. A. Pattison.—p. 9.  
Blood Hydrogen Ion Concentration Values of Normal and Tuberculous Rabbits. Cecilia Shiskin.—p. 14.  
\*Tuberculin Purified Protein Derivative in Treatment of Tuberculosis. B. C. Thompson.—p. 27.

**Tuberculin Purified Protein Derivative in Treatment of Tuberculosis.**—Thompson used tuberculin purified protein derivative in fifty-four cases of cervical gland tuberculosis and obtained improvement in thirty-two cases. In thirteen cases there was considerable reduction in the size of the glands, in ten cases there was great reduction, and in nine cases the glands were almost impalpable. These results are not necessarily permanent: nine of these patients are still under treatment, but their present state indicates a tendency to improve rather than otherwise. No improvement was produced in eighteen cases, in ten of which the disease went on to abscess formation and in two others, after temporary reduction in size, extended to other adjacent glands. In four cases purified protein derivative treatment was abandoned, owing to refusal of further injections or neglect of attendance by the patient. These results compare unfavorably with a series published previously of forty-two cases of cervical gland tuberculosis treated with Beranek's tuberculin. Of the latter, thirty-two cases which came under treatment prior to gross caseation improved or became arrested over a long period. Though the results in the earlier stages were significantly better than those in the present series, local reactions were usually less severe and general reactions seldom occurred, therapeutic effect being obtained at a lower level of dosage. This suggests that the power to produce focal reaction, on which therapeutic value partly depends, is relatively

higher in Beraneck's tuberculin than in tuberculin purified protein derivative, and that purified protein derivative used as an intradermal test should be safer than old tuberculin as regards the possibility of lighting up latent tuberculous foci.

### Japanese Journal of Experimental Medicine, Tokyo

14: 311-456 (Aug. 20) 1936

- Subcutaneous Vaccination by Means of Purified Vaccine Virus. H. Yaoi.—p. 311.
- \*Natural and Immune Antitoxin of Diphtheria in the New-Born and Sucklings. M. Magara.—p. 355.
- Studies on Serodiagnosis of Tuberculosis by Complement Fixation Reaction: I. Concerning Antigen Accomplished with Mixture of Ovolectin and Filtrate of Tubercle Bacillus Cultures Grown on Synthetic Medium. Y. Takeda and T. Sugai.—p. 371.
- Id.: II. Concerning Our Improved Antigen. Y. Takeda and T. Sugai.—p. 375.
- Id.: III. Concerning Results of Complement Fixation Reaction with Our Improved Antigen Done for Serums of Various Forms of Tuberculosis, Syphilis and Leprosy, and Especial Reference to Reaction and Process of Tuberculosis. T. Sugai.—p. 381.
- Study on Classification of Hemolytic Streptococci and Their Role in Puerperium. M. Magara, K. Azuhata and Y. Koshino.—p. 387.
- Demonstration of Cytoplasmic Inclusions in Lesions of Inguinal Granulomatosis: Preliminary Note. K. Ishimitsu.—p. 391.
- Influence of Inorganic Reducing Substances on Experimental Tuberculosis. K. Yanagisawa.—p. 395.
- Modifications of the Constitution of the Circulating Blood of the Rabbit Following Injection of Anti-Bone Marrow Serum. K. Kanazawa and S. Nakagami.—p. 453.

**Diphtheria Antitoxin in the New-Born.**—Magara states that antitoxin of diphtheria is transmitted to the embryo through the placenta, and therefore approximately 73 per cent of the new-born infants are inherently immune from diphtheria. But since the antitoxin in the blood of sucklings disappears rapidly, not all the sucklings are immune to diphtheria during the first six months after birth, as it has been believed. The injection of anatoxin into new-born infants is not sufficient, because they respond feebly to its injection. When pregnant women are given the injection of anatoxin, even a small amount of anatoxin causes antitoxin to increase to a much higher degree than in normal women, without any accompanying accessory reaction, and in addition the antitoxin in the blood of mothers is transmitted to the embryo through the placenta in almost the same quantity. Because even in those pregnant women who had no antitoxin before injection, antitoxin definitely appears with two courses of immunization through the injection of anatoxin given at monthly intervals, the offspring born of immunized mothers are highly immune from diphtheria. In spite of the fact that their antitoxin is of a passive nature, it lasts over a comparatively long period because it is constantly supplemented by the antitoxin contained in milk and completely protects such infants from diphtheria for at least half a year to a whole year after birth. The antitoxin in the blood of such mothers remains unreduced for half a year and therefore immunizes the next offspring born within one or two years. Pregnant women who are immunized with anatoxin secrete from 0.01 to 0.02 unit of antitoxin into their milk continuously for more than six months.

### Journal of Oriental Med., Dairen, South Manchuria

25: 33-48 (Aug.) 1936

- Cow's Milk in Manchuria and Mongolia: Part VI. Reducing Substances, Especially Ascorbic Acid and Glutathione. M. Sugiura.—p. 33.
- Id.: Part VII. Distribution of Amino Acids: No. I. Cystine. M. Sugiura.—p. 35.
- Distribution of Kala-Azar in District of Mukden-Shanhaikwan Line in Manchukuo. M. Yosezato.—p. 36.
- Ascorbic Acid Content of Manchuria Paprika (*Capsicum Annum* L. var. *Grossum* Sendt). M. Sugiura.—p. 37.
- Experimental Studies of "Ultravirus" of Tubercle, Rat-Leprosy and Saprophytic Acid-Fast Bacilli. K. Urabe.—p. 38.
- Experiments on Cultivations of Non-Acid-Fast Bacteria from Tubercle Bacilli and Saprophytic Acid-Fast Bacteria. K. Urabe.—p. 39.
- Study on Inflammation of Perichondrium of Pinna Caused by Bacilli of Green Pus (*Bacillus Pyocyaneus*): Part I. Experiments on Unimmunized Rabbits. A. Arai.—p. 40.
- Statistical Observations on Teeth in Chinese, with Especial Consideration of the Differences in Race. T. Hosaka.—p. 41.
- Investigation on Influence of Aerial Circuit on Bacteria: I. Influence of Aerial Electrode, Earthed Electrode, and Combined Electrode on Growth of Bacteria. M. Ommyoji.—p. 43.
- Id.: II. Influence of Earthed Electrode on Potential of Bacteria Culture. M. Ommyoji.—p. 44.
- Id.: III. Long Period Observations on Influence of Earthed Electrode on Growth of Bacteria and Potential of Bacteria Culture. M. Ommyoji.—p. 45.
- Studies on Kaschin-Beck's Disease. T. Yamanaka.—p. 46.

### Presse Médicale, Paris

44: 1577-1600 (Oct. 10) 1936

- Galactose Concentrations in Diagnosis of Obstructive Jaundice. M. Chiray and G. Albot.—p. 1578.
- Problems of Abortive Tuberculosis. P. Amenille, E. Kudelski and C. Kudelski.—p. 1580.
- \*Sulfamides in Treatment of Erysipelas. H. Bloch-Michel, M. Conte and P. Durel.—p. 1583.
- Roentgenographic Study of Internal Expansion of Right Lung. J. Stephani and R. Kirsch.—p. 1585.
- Aponeurotic Autoplasties in Surgical Cure of Enormous or Recurrent Hernias. J. Gosset.—p. 1586.

**Sulfamides in Treatment of Erysipelas.**—Bloch-Michel and his co-workers studied the effect of para-amino-benzene sulfamide on mice infected with virulent hemolytic streptococci and on patients with erysipelas. With the mice, the effect was more marked when virulent strains were used; with strains of mild virulence, the effect was almost absent. However, the results with mice were variable, depending on the virulence of the strains, the quantity of germs inoculated, the time that separated the inoculation from the treatment and the mode of treatment itself. None of the treated animals were immunized; the survivors were just as sensitive to subsequent streptococcal infection as previously. The clinical observations were made on 250 patients with erysipelas. Treatment of most of these with sulfamide derivatives certainly modified the evolution of this disease. The action was particularly good on the temperature and on the erysipelatos plaques. Furthermore, sulfamides given at the onset of the erysipelas seemed to diminish the number of complications but had no action on the suppurations once they became established.

44: 1601-1624 (Oct. 14) 1936

- Simultaneous Observations of Pulse, Respiration and Electrocardiogram on Indian Yogis. C. Laubry and Mlle. Thérèse Brosse.—p. 1601.
- Mortality from Diphtheria. M. Moine.—p. 1604.
- \*Rational Treatment of Epilepsy. C. Adler.—p. 1607.

**Treatment of Epilepsy.**—Adler describes a method of treatment which he believes is satisfactorily based on the most plausible theory of the pathogenesis of epilepsy. It consists in the use of one or more barbitol derivatives combined with caffeine in small and divided doses. These can be continued for long periods without injurious results, and it is best by gradual increase to determine the optimal dose for complete elimination of epileptic manifestations. Some variation in the time of administration of the fractional doses may be introduced, depending on the usual time of origin of epileptic attacks. By this means it is possible to inhibit completely the so-called epileptic center and to avoid all secondary manifestations in a person suffering from chronic epilepsy. This inhibition can be definitely maintained without further treatment in about 12 per cent of the patients. The only plausible hypothesis explaining this, according to the author, is that the "epileptic center," if maintained for a sufficiently long time (from eight to fifteen months) under the influence which inhibits it, eventually develops a new habit which prevents it from continuing to react to the cause or causes which previously influenced it.

### Schweizerische medizinische Wochenschrift, Basel

66: 1105-1152 (Nov. 14) 1936. Partial Index

- \*Medication with Vitamin A in Hyperthyroidism. I. Abelin.—p. 1106.
- Genital Hemorrhages During Last Months of Pregnancy. A. Couvelaire.—p. 1116.
- \*Spontaneous Change of Sex in Hermaphrodite. J. Halban.—p. 1130.
- \*When and How Should Physician Prescribe Echolics. P. Hüsey.—p. 1134.
- Technic of Closure of High Vesicovaginal Fistulas. E. Jacggy.—p. 1136.
- \*Therapy of Habitual Abortion. P. Jung.—p. 1137.
- Treatment of Puerperal Fever. H. Knaus.—p. 1141.

**Medication with Vitamin A in Hyperthyroidism.**—Abelin directs attention to experimental studies on the effects of the vitamins on hyperthyroidism, particularly the experimentally demonstrated antagonism between vitamin A and thyroxine. The discovery of this antagonism led to studies on the vitamin A supply of patients with hyperthyroidism and also to the therapeutic application of vitamin A in hyperthyroidism. He mentions several vitamin preparations and then takes up the question of the auxiliary treatment, pointing out that vitamin A is a good adjuvant in the medication with iodine and with diiodotyrosine in that it greatly lessens the "crisis"

and the temporary exacerbations that ordinarily occur in these forms of medication. The author admits that a definite evaluation of vitamin A therapy in hyperthyroidism is not possible as yet.

**Spontaneous Change of Sex in Hermaphrodite.**—Halban relates the history of a true hermaphrodite with virile habitus, in whom a sex transformation toward the female habitus took place at the age of 30. The author is unable to give an explanation of the cause of this transformation, yet he thinks that the case has clinical significance, because it demonstrates the possibility of a spontaneous transformation of the sex of a hermaphrodite. He points out that this should be kept in mind in case of reports about sex transformations of hermaphrodites by means of operations or of endocrine therapy.

**Use of Ecbolics.**—Hüssy warns that ecbolics should not be used (1) in case of a disproportion between fetus and pelvis, (2) in case of threatened rupture of the uterus and (3) in case of normal labor pains. During labor it is better to give small than large doses, for they are less dangerous and just as effective as the large ones. Ecbolics should be given only if the uterine contractions are too weak and too far apart. The author recommends chiefly quinine for the period of dilatation and solution of posterior pituitary for the period of expulsion. Ergot preparations should not be given during these two periods. During the after-birth period, ergot and posterior pituitary preparations should be given together. At this time the larger doses are not only permissible but advisable. In the course of abortions, quinine and pituitary preparations may be tried, provided the hemorrhage is not too severe. Ecbolics are not suited for inducing labor in a uterus not yet undergoing contractions.

**Therapy of Habitual Abortion.**—Jung followed Sellheim's suggestion to try serum from healthy pregnant women in the treatment of habitual abortion. Sellheim in turn had been induced to make this suggestion by Mayer's report (in 1910) about the possibility of curing pregnancy toxicoses by means of the injection of the serum of healthy pregnant women. Jung, instead of using the serum, decided to use the whole blood. He gives brief clinical histories of nine women, who had had from two to six abortions previous to the pregnancy during which they were given the injections. The histories indicate that 10 or 20 cc. of blood was given by intramuscular injection at intervals of from two to six weeks. Others give the injection at shorter intervals (four or five days). The total number of injections varied in the different cases. Occasionally, when pregnancy blood was not available, progesterin was injected instead. The author emphasizes that this treatment cannot be expected to be successful in all cases of repeated abortions. He employed it only in cases of obscure etiology in which definite causes could not be found. The case histories indicate that it was successful in nearly all cases.

### Archivio per le Scienze Mediche, Turin

62: 347-474 (Oct.) 1936

- Chlorine Contained in Gastric Secretion Obtained by Sounding. A. Allodi and M. Cerati.—p. 347.  
Intussusception of Small Intestine by Benign Tumors: Case. G. Capitolo.—p. 393.  
Action of Prehypophyseal Extracts in Passive Hyperthermia. S. Fian-daca.—p. 413.  
Distribution of Uric Acid in Plasma and Globules in Normal Blood. S. Battistini and F. Quaglia.—p. 437.  
Gastric Secretion in Liver Diseases. F. Quaglia.—p. 457.

**Gastric Secretion in Liver Diseases.**—Quaglia reports the results of examinations on the gastric secretory functions and on the behavior of the gastric chemistry in 386 cases of liver and biliary diseases (cholelithiasis, cholecystitis, angiocholitis and cirrhosis). The author believes that achlorhydria and hypochlorhydria of different intensity, generally in association with a diminished gastric secretion, are found in liver and biliary diseases in 70 or 80 per cent of the cases. Normal chlorhydria and hyperchlorhydria are rare. The latter depends on the coexistence of gastric ulcer or duodenitis. The mechanism that induces the gastric functional or anatomic lesions which cause achlorhydria and hypochlorhydria is unknown. Its origin is related to different factors, such as diet, infection, disturbance of the acid-base equilibrium between the gastric secretion and the bile and a dysfunction of the sympathetic nervous system.

### Ginecologia, Turin

2: 907-1022 (Oct.) 1936. Partial Index

- \*Renal Threshold in Normal Pregnancy. G. Addressi.—p. 907.  
Iodine in Blood in Relation to Functions of Thyroid in Pregnancy. E. Berutti.—p. 925.  
Cytologic Examination of Vaginal Secretion in Puerperium: Medical-legal Importance. M. Nizza.—p. 959.  
Nupercaine Spinal Anesthesia in Gynecology. V. Silvestrini.—p. 976.  
Reaction of Ovary of Rabbit Transplanted After Treatment with Gonadotropic Substances. M. Nizza and E. Berutti.—p. 981.  
Behavior of Lymphatic Vessels of Fallopian Pregnant Tube. A. Gusso.—p. 991.

**Renal Threshold in Normal Pregnancy.**—Addressi determined the renal threshold in normal pregnancy by testing the permeability of the kidney to dextrose in induced hyperglycemia. Especial care was taken that the women tested had normal kidneys. The threshold is lowered in the last half of pregnancy, as proved by the increased permeability of the kidney to dextrose in the test. The lowering of the renal threshold can take place in normal conditions. It is dependent on several factors, such as the secretory functions of the renal epithelium, the predominance of the vagal over the sympathetic tonus in the renal innervation, the influence of insulin secreted by the pancreas and the reaction of the kidney to hyperglycemia. In pregnancy the condition is caused by an increased tonus of the vagus in the segment that innervates the kidney. The vagal disturbance originates in the endocrine and sympathetic modifications that take place during pregnancy. If the vagal tonus is exaggerated, spontaneous glycosuria, without hyperglycemia, appears. If it is not exaggerated, the renal threshold decreases and the stimulation of induced hyperglycemia suffices to permit the passage of sugar from the blood to the urine.

### Prensa Médica Argentina, Buenos Aires

23: 2451-2494 (Oct. 28) 1936. Partial Index

- \*Mechanism of Action of Gastric Mucin. C. Bonorino Udaondo, H. Zunino and A. M. Centeno.—p. 2451.  
Arteriovenous Aneurysm of Cavernous Sinus and of Internal Carotid Artery: Ligation of Internal Common Carotid Artery. A. Ceballos.—p. 2454.  
Carcinoma of Neck of Uterus: Clinical and Therapeutic Study. A. J. Bengolea.—p. 2463.  
Shock in Obstetrics and Gynecology. A. G. Peralta Ramos.—p. 2474.  
Biliary Lithiasis. Teresa Malamud.—p. 2477.

**Action of Gastric Mucin.**—Bonorino Udaondo and his collaborators report the results of experiments made to verify the mechanism of action of gastric mucin in neutralizing gastric acidity. They tested, in vitro, the protective action of gastric mucus by its influence on pepsin, sodium hydroxide and hydrochloric acid. They found that a 1 per cent solution of gastric mucus (neutralized in diluted hydrochloric acid and an alcoholic solution of phenolphthalein) permits digestion of albumins (in an albumin solution) by pepsin. One cubic centimeter of a tenth normal solution of sodium hydroxide to which a small amount of gastric mucus in powder had been added required 0.93 cc. of tenth normal hydrochloric acid to be neutralized, thus showing that it fixed 0.7 cc. of sodium hydroxide in each cubic centimeter of the solution. The same amount of sodium hydroxide was fixed by gastric mucus in solution. Gastric mucus in powder did not cause fixation of hydrochloric acid. Gastric mucus in solution causes slight fixation of hydrochloric acid. The authors conclude that the protective action of gastric mucus fails in controlling the effects of pepsin and that gastric mucus acts as a buffer to alkalis and acids. The action of gastric mucus in protecting the gastric mucosa against chemical constituents of gastric secretion is of little value in comparison with its influence on physical factors.

### Deutsches Archiv für klinische Medizin, Berlin

179: 321-432 (Oct. 9) 1936. Partial Index

- Interference Dissociation in Electrocardiogram. C. Korth and W. Schrumph.—p. 321.  
\*Methemoglobinemia After Poisoning with Ethyl Nitrite. K.-A. Seggel.—p. 353.  
Relation Between Specific Gravity and Composition of Urine. J. Weiser and H. Thelen.—p. 362.  
\*Abdominal Idiopathic Porphyria. H. Kämmerer and W. K. Meyer.—p. 392.  
Investigations on Hypoglycemia Following Operations on Stomach. Magdalena Wöhrle.—p. 411.

**Methemoglobinemia After Poisoning with Ethyl Nitrite.**—Seggel describes the symptomatology that developed in four workers who, for from forty-five to sixty seconds, were

exposed to the inhalation of ethyl nitrite. They were barely able to leave the room in which the gas was escaping, and they had severe dyspnea. Oxygen was given at once and the men were hospitalized. On arrival at the hospital, one hour after the poisoning, the skin and the mucous membranes of the patients showed a peculiar chocolate-brown to violet color. From the fact that the poisoning had been caused by a nitrite ester, it was assumed that a methemoglobin poisoning existed. The blood was tested for the presence of methemoglobin by a simple method which, although not exact, is nevertheless adequate for clinical purposes. The method, not hitherto used for the detection of methemoglobin, is based on the principle of the determination of the layer thickness, in which a certain line of absorption just disappears. On the first day the examination of the blood revealed methemoglobinemia, but on the second day it had disappeared. Methemoglobinuria was never observed. However, the development of a splenic tumor and an increase in the bilirubin content of the blood indicated a decomposition of the methemoglobin in the hepatolymphatic system. The relatively mild poisoning caused no lasting defects.

**Abdominal and Idiopathic Porphyria.**—Kämmerer and Meyer accept Micheli's classification of porphyrias into idiopathic and toxic forms. The idiopathic forms may become manifest with an abdominal, nervous or cutaneous symptomatology. The term idiopathic indicates the predominance of constitutional factors, whereas, in the toxic forms, infections or toxins play the chief part. The authors give their attention to the idiopathic form of porphyria in which the abdominal symptoms predominate. They describe the history of one case in which the daily quantity of urine contained 1,200 micrograms of coproporphyrin. Uroporphyrin was present only in traces. When the patient was given food that contained large amounts of blood pigment, the coproporphyrin content of the urine increased considerably; when a "porphyrin-free" diet was given, it decreased. It appears that protoporphyrin is absorbed in the intestine but that the liver fails to effect further decomposition and instead changes it to coproporphyrin. The authors think that a disturbance in a partial function of the liver is responsible for this. They assume that milder cases of a more or less isolated disturbance of the porphyrin metabolism are more frequent than has been believed and that they are usually accompanied by disturbances in the sympathetic nervous system. It appears that in such cases a greater intestinal putrefaction results in the formation of more than average amounts of porphyrin, which in turn represent an excessive load for a deficiently functioning liver. Restriction of foods containing large amounts of blood pigment and regulation of the intestinal function are the chief therapeutic requirements in these cases.

### Deutsche Zeitschrift für Chirurgie, Berlin

247: 411-554 (Sept. 7) 1936. Partial Index

- \*Respiratory Pyelogram. O. Hilgenfeldt.—p. 411.
- \*Gastric and Duodenal Perforation in Course of Roentgenologic Examination with Contrast Material. H. R. Paas.—p. 461.
- Spontaneous Drainage of Purulent Mediastinitis into Perforated Esophagus. H. R. Paas.—p. 495.
- Symptomatology and Pathology of Benign Tumors of Tendon Sheath: Xanthomatous Giant Cell Tumor. M. Zumtobel.—p. 501.
- Extrarenal, Retroperitoneal Tumors. K. von Ferstel.—p. 517.
- Treatment of Facial Furuncle. Helene Soest.—p. 526.

**Respiratory Pyelogram.**—According to Hilgenfeldt, the respiratory excursion of the kidneys may be demonstrated and measured by means of pyelograms taken from a patient in recumbent posture on complete expiration and inspiration. A single or two separate plates are sufficient. The author presents the respiratory pyelogram as a new diagnostic method in urology. He found the method valuable in (1) the diagnosis of pelvic and ureteral stones, particularly in differentiating shadows of other than calculous origin; (2) in localization of foreign bodies; (3) in recognition or differentiation of inflammatory conditions of the kidney and of the renal fossa, in paranephric abscess, woody phlegmon, renal carbuncle and pyelonephritis, and (4) in determining the relation of the renal fossa to neighboring inflammatory states, such as pancreatitis, appendicitis or tuberculosis. The alteration in renal excursion, however, is only a symptom to be interpreted along with other clinical and urologic investigations. It may be of aid in a

difficult diagnosis of renal disease, it may furnish supporting evidence or, on the other hand, it may aid in ruling out kidney involvement.

**Gastroduodenal Perforation.**—Paas reports from von Haberer's clinic a case of a duodenal ulcer perforation and one of a gastric ulcer perforation, occurring in the course of a roentgenologic examination with the aid of a contrast meal. The cause of perforation, he believes, is the overloading of the stomach with the contrast meal, the increased motor activity with the contractions of the longitudinal and the circular muscle fibers bringing about the rupture of the thinned out wall. He believes that manipulation of the abdominal wall plays a subordinate part in the rupture. He had observed a prolonged pyloric spasm in dogs in which he had produced an artificial tear in the anterior duodenal wall close to the pylorus. This spasm lasted for several hours and prevented the passage of the gastric contents into the duodenum and from there into the preperitoneal cavity. It required the administration of large amounts of the meal and the production of a large tear in the anterior wall of the duodenum to bring about the effusion of considerable amounts of the meal into the free peritoneal cavity in the course of the first few hours. This fact explains the better prognosis of the duodenal perforation after administration of a contrast meal as compared with that of perforation of a gastric ulcer. Injection of from 50 to 140 cc. of barium sulfate in the peritoneal cavity caused death within twenty hours in the ten dogs experimented on. Death was due not to bacterial action but to the extremely severe irritating effect of the barium on the viscera and the splanchnic nerves. Late roentgenologic examination and histologic studies demonstrated that the barium sulfate was not being absorbed from the peritoneal cavity. The early and late histologic appearances of the liver, spleen, kidneys, stomach, intestine, omentum, mesentery and abdominal wall presented a typical picture of a connective tissue encapsulation process of a nonabsorbable foreign body. The process was limited to the superficial broad surfaces of the viscera. The parenchyma did not present any pathologic alterations in late studies. The author makes the following therapeutic suggestions: (1) thorough removal of the still nonadherent barium sulfate in the course of operation, (2) simple suture of the perforation in the presence of a considerable escape of the contrast material into the free peritoneal cavity and (3) prophylactic support of the peripheral circulation.

### Klinische Wochenschrift, Berlin

15: 1505-1544 (Oct. 17) 1936. Partial Index

- \*Treatment of Diphtheria with Cevitamic Acid. H. Otto.—p. 1510.
- Experimental Diphtheria Intoxication of Guinea-Pigs and Its Non-specific Modification by Substances Produced in the Body Itself. H. Lotze and S. Thaddeus.—p. 1512.
- Action of Digitalis. S. Lauter and F. Schmitz.—p. 1515.
- Pathogenesis of Gonococcal Arthritis, Endocarditis and Sepsis. O. Zimmermann-Meinzinger.—p. 1518.
- \*Further Cases of Pelger's Nuclear Anomaly. M. Alieff and R. Reckers.—p. 1522.

**Treatment of Diphtheria with Cevitamic Acid.**—Otto cites observations on the relations between diphtheria and the vitamin C reserves of the organism. He was induced to use cevitamic acid as an adjuvant in the treatment of diphtheria by the observation that patients with diphtheria eliminated extremely small amounts of vitamin C in the urine; that is, the administered vitamin C was retained and utilized by the organism that was under the influence of the diphtheria toxin. The retention was especially great when in cases of toxic diphtheria from 500 to 700 mg. of cevitamic acid was administered daily by intravenous injection. To obtain reliable information about the efficacy of cevitamic acid in diphtheria, the author made comparative studies in ninety-two cases treated from Jan. 1 to June 1, 1936. The treatment with diphtheria serum was the same in all cases, but forty-two were treated with cevitamic acid and fifty were not. Tabular reports indicate that the administration of the cevitamic acid made no difference as regards the time of disappearance of the diphtheric membrane and of the temperature, nor did it influence the number of complications and of fatalities. However, the author did observe that the cevitamic acid exerted a favorable influence on hemorrhages, particularly nosebleeds. This he ascribes to the fact that cevitamic acid reduces the permeability of the vessels, as is known also from its effect in essential thrombo-

penia and other forms of hemorrhagic diathesis. The author concludes that, if the retention of large amounts of cevitic acid by diphtheria patients is interpreted as indicating a deficiency of the organism in this substance, its administration is justified up to the time of the disappearance of the membrane and particularly during the development of complications. However, a definite therapeutic value can be ascribed to it only in cases of diphtheric hemorrhages.

**Pelger's Nuclear Anomaly.**—Alieff and Reekers direct attention to the fact that Pelger in 1930 described two cases with a peculiar white blood picture. 1. There was a considerable shifting to the left and there were more staff cells than segmented cells. 2. The staff cells were all of uniform shape: regular forms, usually with a small curvature in the middle of one side. 3. The cells with the segmented nuclei showed a peculiar behavior. They consisted of two fragments that were connected by a thin thread. This behavior was noticeable in the neutrophil as well as in the eosinophil and basophil leukocytes. After citing several other investigators who observed cases with this form of nuclear anomaly, the authors state that they observed it in a patient with lupus of the face. All the members of this woman's family were examined and the anomaly was detected in thirteen persons, belonging to three generations. In discussing the genesis of this anomaly, the authors point out that opinions are still divided as to whether it is a purely constitutional anomaly or whether this blood picture occurs only in tuberculosis. Pelger himself assumed that this blood picture had a relationship with a clinically obscure tuberculosis. Another investigator considers this nuclear anomaly of a purely constitutional nature. However, the authors point out that the family anamnesis of the case analyzed by that investigator shows tuberculosis. That investigator assumed a transmission from the mother to the children, whereas other observers were able to trace transmission from the father. After citing several other opinions, the authors state that in the family studied by them there was considerable tuberculosis.

### Medizinische Klinik, Berlin

32: 1489-1520 (Oct. 30) 1936. Partial Index

- \*Hormone Regulation of Growth and Secretion of Mammary Glands. L. Herold.—p. 1489.
- Anemias. E. Woenckhaus.—p. 1491.
- Advantages and Limits of Roentgenologic Examination in Inflammatory Processes of the Middle Ear. W. Loepp.—p. 1496.
- \*Prodromal Angina in Measles. B. Dragišić.—p. 1498.
- Symptomatology and Therapy of Thallium Poisoning. M. Heimann.—p. 1500.

**Hormone Regulation of Mammary Glands.**—Herold shows that during pregnancy the combined influence of the estrogenic and corpus luteum hormones prepare the mammary gland for lactation. However, these two hormones have merely a growth-promoting but not a lactogenic action. The building up of the mammary gland not only is the prerequisite for the elicitation of the milk secretion but also provides the basis for influencing the milk secretion by hormone action. Lactation is brought on by the action of the lactation hormone of the anterior lobe of the hypophysis. The author assumes that the expulsion of the fetus and of the placenta removes a blocking mechanism from the hypophysis so that the lactation hormone can be secreted. The blockage is produced by the hormones of the ovary, which, during pregnancy, are secreted by the placenta. The detection and purification of the lactation hormone makes it possible to modify the milk secretion by hormone action. Attempts have already been made to stimulate inadequate milk secretion by the administration of lactation hormone, but, although the results were encouraging, the limited hormone supply still restricts this form of therapy. Moreover, the inhibition of lactation, which thus far has been proved only in animal experiments, may eventually prove valuable in the suppression of undesired lactation, for instance in cases in which the fetus is not viable.

**Prodromal Angina in Measles.**—Dragišić cites reports from the literature and his own observations to demonstrate that the incubation period of measles is not as deficient in symptoms as is widely believed. In a children's clinic he had the opportunity to observe the period of incubation. In a considerable number of cases he observed an initial fever (twenty-

four or forty-eight hours after the infection). This fever subsides, but a tonsillitis may develop either from eight to ten days before the development of the exanthem or, more often, from three to four days before. In the forty cases observed by the author, the tonsillitis was usually of the follicular type. In discussing the significance of the tonsillitis that occurs during the incubation period of measles the author states that it is not advisable to base the diagnosis of measles on it exclusively. Only if the epidemiologic conditions are known (in families, children's clinics and so on) may the premonitory tonsillitis be regarded as an indication of the approach of measles.

### Wiener klinische Wochenschrift, Vienna

49: 1329-1356 (Oct. 30) 1936. Partial Index

- Theoretical and Practical Aspects of Tuberculin Therapy of Rheumatism. C. Reitter.—p. 1329.
- Methods of Research on Human Heredity. Berta Aschner.—p. 1333.
- \*Hitherto Unnoticed Pancreatohepatic Syndrome Produced by Transition of Pancreatic Juice into Blood Stream. A. Edelmann.—p. 1336.
- Antithyroid Action of Vitamin A. K. Fellingner and O. Hochstädt.—p. 1339.
- \*Bursitis Calcanea in Skaters. H. Kraus.—p. 1340.
- Chronic Ulcerating Colitis in Thrombopenia: Case. A. Czabafy.—p. 1343.

**Pancreatohepatic Syndrome.**—Edelmann observed a number of patients with pancreatic disturbances in whom neurologic and dermatologic symptoms predominated. He reports one case that was under observation for months. The patient had abdominal symptoms that gave the impression of a cholecystopathy. A surgical intervention revealed a normal gallbladder, but the pancreas showed signs of chronic pancreatitis. The patient also developed a number of neurologic and psychiatric symptoms which indicated the presence of multiple foci (caused by toxins or ferments) in the brain and spinal cord. Moreover, a polyneuritis indicated involvement of the peripheral nerves. Then there were psychic disturbances of the type of Korsakoff's syndrome, and the examination of the vestibular apparatus disclosed a number of disturbances, such as failure to respond to caloric stimulation, attacks of vertigo, and disturbances in the equilibrium. The patient became extremely emaciated and he also had cutaneous disorders in the form of atrophy, diffuse gray pigmentation and follicular hyperkeratosis. In discussing this case the author emphasizes the necessity of differentiating between acute pancreatitis, with its fulminant manifestations and usually fatal outcome, and the chronic form in which the pancreatic juice may enter the blood stream, just as bile may enter the blood stream in case of disorders of the biliary system. Whether the pancreatic juice that enters the blood stream injures the central nervous system directly or by way of other organs, the author is unable to say; at any rate there seems to be a neurotropic and dermatotropic tendency. The author describes other cases of chronic pancreatitis and shows that in some of them the described syndrome is amenable to therapy; for instance, in cases of obstruction or stenosis of the pancreatic duct or in cases in which, as the result of pancreatic swelling after gastric or duodenal ulcer, a lymphangitis develops in the region of the head of the pancreas. He concludes that a knowledge of the syndrome here described has repeatedly proved helpful in the diagnosis of chronic pancreatic disturbances. Moreover, the passage of pancreatic juice into the blood stream may play a part in the pathogenesis of various syndromes of the central and peripheral nervous system.

**Bursitis Calcanea in Skaters.**—Kraus directs attention to a disorder that he observed in skaters, which could be traced to faulty shoes. It consists of a subcutaneous bursa on the calcaneus which develops as the result of pressure from the too greatly curved and stiffened heel portion of the skating shoe. The first symptoms usually appear shortly after new shoes have been used. Pains develop on the calcaneus, particularly at the attachment of the triceps surae. Examination reveals a pressure point on the calcaneus and in the later stages reddening and swelling of the skin in the painful area. In contradistinction to bursitis of the achilles tendon, the tendon is not painful. One of the chief factors in the therapy is the altering of the skating shoe. The stiffened and curved heel portion is removed and is replaced by a strip of soft leather 3 cm. in width. The painful area on the foot is protected by an adhesive bandage. After three or four days the patients are usually able to skate again.

**Sovetskiy Vrachebnyy Zhurnal, Leningrad**

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- Washing Out of Stomach and Duodenum as Therapeutic Method. N. A. Bukatko.—p. 1530.
- \*Short Wave Therapy. I. A. Piontkovskiy and G. L. Fabricant.—p. 1538.
- \*Use of Umbilical-Placental Blood for Massive Transfusions in Surgery. Ya. M. Bruskin and P. S. Farberova.—p. 1546.
- Intravenous Methenamine Therapy in Dermatology. S. L. Lieberman and G. O. Suteev.—p. 1555.
- Scarlatinal Otitis in Young Children. A. I. Ivanova.—p. 1559.

**Short Wave Therapy.**—According to Piontkovskiy and Fabricant, short wave therapy markedly altered the clinical course of acute local suppurative processes, such as furuncles, carbuncles, adenitis, phlegmons, panaritiums and mastitis. The most striking effect noted was the total disappearance or marked diminution of pain. The analgesic effect appeared to be superior to any obtained by physical therapeutic measures. There was rapid disappearance of the edema of the tissues surrounding the inflammatory focus and of the redness and immobility of the part involved. The treatments were followed as a rule by a fall in body temperature. The effect on the lesion was to accelerate the process of suppuration and absorption. One or two treatments frequently led to spontaneous opening and copious discharge of pus followed by rapid healing. Early application of short wave therapy frequently resulted in aborting the inflammatory process. The authors obtained their best results in cases of furuncles and carbuncles. Panaritiums and lymphadenitis required longer treatment, while the results in mastitis were negligible. All cases of phlegmon of the hand required surgical intervention. The authors warn against the use of a strong current in these cases, for fear that the heat created in the tissues may cause the inflammatory process to spread. The therapeutic effect of short waves did not seem to depend on the creation of heat within the tissues, since identical results are obtained with small doses incapable of producing the sensation of warmth. The authors likewise could not confirm the alleged bactericidal effect of the waves in their experiments in vitro. Observations on cultures of *Staphylococcus pyogenes-aureus*, *Bacillus typhi-abdominalis* and *Bacillus subtilis* failed to show any such effect. Smears and cultures from pus of carbuncles treated with short waves failed to demonstrate a bactericidal effect in spite of a favorable clinical course. The authors suppose that the favorable effect was due to the action of the waves on the host rather than on the micro-organisms. The results in seventeen cases of chronic osteomyelitis were negligible. Of eleven patients suffering from polyarthritis, ten did not obtain any benefit from the treatment. As to the hazards of short wave therapy, the authors point out that, while it may be considered entirely safe in the hands of a trained physical therapist, the possibilities of a burn are greater than with diathermy.

**Umbilical-Placental Blood for Massive Transfusions.**

—Because of a demand for blood transfusions in the surgical treatment of malignant neoplasms, Bruskin and Farberova of the Central Oncologic Institute of Moscow resorted to the use of blood obtained from the umbilical vein and the placenta of the new-born. They believe that fetal blood is particularly valuable because of its high immunobiologic antitlastic quality against neoplasms. The amount obtainable from one placenta varies between 50 and 120 cc. Bruskin demonstrated in dogs the safety of utilizing blood from several donors. The authors proved in their clinical work the safety of using a mixture of blood from several donors of the same group. In the last four months, 114 transfusions of umbilical-placental blood were performed at the institute and sixty at the lying-in hospital. Studies of the morphology and of the biochemical properties of placental blood demonstrated the high content of the important elements. The hemoglobin was found to vary from 90 to 120 per cent, red cells from 5,000,000 to 6,000,000, and leukocytes from 8,000 to 16,000 with a definite lymphocytosis (32 to 46 per cent). The reticulocytes varied from eleven to thirty in 1,000 cells. A number of authors believe that placental blood contains a number of hormones of ovarian and anterior pituitary origin. The blood was conserved for from six to ten days. The authors estimate that, of the 60,000 annual births in Moscow, 40,000 could be used for the purpose of collecting placental blood. An average of 50 cc. from each birth would yield 2,000 liters, or an amount sufficient for from 6,000 to 8,000 blood transfusions.

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- \*Angina Pectoris: Contribution to Illumination of Pathogenesis and Anatomic Basis. A. Jervell.—p. 1001.
- \*Incarcerated Diaphragmatic Hernia. G. Røvig.—p. 1018.
- \*Pathology of Amyloid Kidney. R. Opsahl.—p. 1028.
- Electrical Illumination of Projection at Distance of Five Meters from Charts for Keeness of Vision. S. Holth.—p. 1039.
- Shoulder Delivery in Breech Presentation and New Method of Performing It. J. Løyset.—p. 1041.
- Retrograde Pyclography in Upright Position. J. Stang.—p. 1049.

**Angina Pectoris.**—From his investigations, Jervell concludes that angina pectoris pain of the type of effort angina and the so-called status anginosus in cardiac infarct are closely related clinically and pathogenically. In status anginosus the basis is an absolute coronary insufficiency in a limited field, corresponding to acute coronary stenosis; in effort angina it is a relative coronary insufficiency manifested only under special conditions, as in physical exertion, the anatomic cause most often being a coronary stenosis. In both, only anatomic changes in the great coronary branches are to be considered. In cases of extensive coronary sclerosis not accompanied by angina pectoris, the blood supply for the entire myocardium is probably insufficient. The heart has to suspend its work after coronary circulation, the contraction ability diminishes, the minute volume becomes inadequate and symptoms of insufficiency appear, first of all dyspnea. There need be no actual ischemia of the myocardium. If, on the contrary, a particular coronary branch is stenosed while the coronary circulation is otherwise satisfactory, the insufficiently nourished part must follow the well nourished heart musculature in its reaction to increased demands. A local ischemia then results, causing symptoms of angina pectoris. This view of the pathogenesis of angina pectoris explains the presence of grave coronary sclerosis without angina pectoris and, conversely, the occurrence of violent attacks without extensive changes. The decisive factor is thus not the extent of the sclerosis but the extent to which it causes stenosis in one of the main branches, leading to a disproportion between the blood supply to the different parts of the heart.

**Incarcerated Diaphragmatic Hernia.**—Røvig describes the case of a woman, aged 38, who was operated on under the diagnosis of volvulus coli. There was an incarcerated diaphragmatic hernia of unusual size with abnormally long colon (macrocolon) as hernial content. He says that hernia and colon malformation were undoubtedly congenital. The hernial portal was a grave defect in the left side of the diaphragm corresponding to the foramen of Bochdaleck. A palliative intervention was indicated and after phrenic exeresis on the left side the transverse and descending colon were anastomized subphrenically. On after-examination about two and a half years later the patient had but slight subjective symptoms and was able to work. The roentgenogram showed satisfactory functioning of the anastomosis and, as before, a long colon loop in the left side of the thorax. In a certain reclining position the hernia was complicated by transposition of the stomach, duodenum and small intestine to the left side of the thorax, but spontaneous reposition occurred on shifting the position.

**Amyloid Kidney.**—Opsahl's first patient with subacute anhydropic form ending in uremic coma was a woman, aged 28, with a history of fistulous tuberculous coxitis which had healed with ankylosis and, fifteen years later, a cavernous pulmonary tuberculosis of rapid course. The second and third patients were a man, aged 31, and a woman, aged 36, who had bilateral autochthonous thrombosis of the renal veins without recognized clinical symptoms of a thrombosis. The basic disorder was a cavernous pulmonary tuberculosis with a course of at least two and six years, respectively. The fourth patient, a man, aged 40, who presented the picture of a lipid nephrosis, had histologically diffuse degeneration and atrophy, considerable hypertrophy of the heart and no hypertension, finally hypotension, Addison coloration of the skin and marked amyloid deposits in the adrenal cortex and medulla. The basic disease was a chronic polyarthritis on a gonorrheal basis (without suppuration). The heart atrophy is regarded as the expression of an earlier arterial high tension, probably due to a diffuse glomerulus degeneration in the kidneys. The normal or subnormal pressure in the later course of the disturbance is attributed to adrenal insufficiency.

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## THE CLINICAL SIGNIFICANCE OF AURICULAR FIBRILLATION

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Some thirty years ago Mackenzie observed that in certain cases of auricular fibrillation a conspicuous reduction of ventricular rate follows the administration of digitalis. Mackenzie believed that the accompanying relief of symptoms probably was to be attributed to the slowing, a conception elaborated and strengthened by Sir Thomas Lewis. Knowing of no beneficial effect of digitalis on the musculature of the failing ventricle, Lewis referred clinical improvement entirely to reduction in rate. The slowing was explained as due to a measure of auriculoventricular block induced by a special action of the drug on the connecting tissues. Since block of moderate extent will slow the ventricle only in cases of auricular fibrillation, this explanation logically limited the use of digitalis to cases of that arrhythmia. Lewis has held, furthermore, that the existence of established fibrillation implies disease of ventricular muscle and that the congestive heart failure which is present in most cases results from the tachycardia of the abnormal rhythm. On these postulates it has regularly been taught that digitalis should be employed to control ventricular rate in auricular fibrillation; if heart failure is present the ventricle will be relieved of the harmful effect of tachycardia and allowed to recuperate; if heart failure has not yet appeared, the block-producing action of the drug will protect the ventricle from rapid beating and thus tend to prevent failure; in all cases the drug should be used.

Under this conception, the significance of auricular fibrillation in any case is quite simple. It embodies merely the obligation properly to administer digitalis. At present, however, many physicians, while adhering to this time honored conception in its essential aspects, still entertain certain notions which in one or another particular are quite at variance with the premises on which it was founded. Interest is being manifested in the question of the cause of the abnormal rhythm as well as in the problem of management. More than once, in recent years, attention has been called to the existence of established fibrillation with neither heart failure nor heart disease. By almost every one it is now agreed that the use of digitalis should not be limited to cases of auricular fibrillation but that regularly in congestive heart failure the drug is of great value because of an effect directly on the muscle of the ventricle—an effect

independent of rate or rhythm. Increasing attention, moreover, is being given to the observation made by Mackenzie that, in certain cases of the arrhythmia, digitalis causes no slowing in rate. There is an increasing tendency to omit the drug in special cases.

We have come to think of auricular fibrillation as follows: In certain situations some unusual factor may act on the wall of the auricle in such a way as to initiate the abnormal movement. It is to the underlying disorder rather than to its manifestation that chief attention must be given in diagnosis and in therapy; digitalis may or may not be indicated. This point of view is not new but it appears not yet to be very generally held. It has been our impression that in fibrillation it is only in cases of congestive heart failure that therapeutic doses of digitalis produce ventricular slowing and that in other cases no occasion exists for employment of the drug.

### OBJECT AND PLAN OF STUDY

In order to check the correctness of this notion, we made a detailed study of the records of the Barnes Hospital. An additional object was to note the clinical conditions associated with the abnormal rhythm, data which might throw light on the problem of etiology.

Beginning with July 1, 1925, 431 consecutive case records of fibrillation were investigated. We recorded the sex, the age, the principal diagnosis, the cardiac diagnosis, the electrocardiographic diagnosis (in addition to that of auricular fibrillation), the presence or absence of any evidence of heart disease, the etiologic type, evidences of specific valvular lesions, the changes found at autopsy with regard to the auricle, the presence or absence of toxic agents and of fever, whether or not the auricular fibrillation stopped, whether or not there was any evidence of heart failure, whether or not digitalis was employed, the amount and period of time of administration, the change in heart (or pulse) rate after digitalis, other cardiac therapy, surgical operations and the hospital "result."

### RESULTS

*Heart Disease.*—In 253 of the cases the principal diagnosis was related to the heart; in 178 cases it was noncardiac. Electrocardiograms were made in 387 cases. In 256 the record was thought to indicate some abnormality other than the arrhythmia, in 131 no other abnormality. Including secondary diagnosis, mention was made of some cardiac abnormality in addition to auricular fibrillation in 375 cases. In the remaining fifty-six cases no cardiac diagnosis was recorded, but study of these records showed that in fourteen some cardiac disorder might possibly have been suspected. Excluding these cases of "possible heart disease" there were left forty-two cases in which there existed no suspicion of anything wrong with the heart other than the auricular fibrillation itself. Examples of such cases are splenic anemia, fracture of the skull, carcinoma of

the uterus, carcinoma of the mouth, carcinoma of the cervix, ureteral colic, strangulated hernia, embolism of the pulmonary artery, and neuralgia of the fifth cranial nerve.

*Type of Heart Disease.*—There were the following diagnoses of heart disease: rheumatic, 136; "arteriosclerotic," 114; hypertensive, 55; thyroid, 57; syphilitic, 7; miscellaneous, 6; no cardiac diagnosis, 56. As just stated, this group of fifty-six cases presenting "no heart disease" was further reduced to forty-two by exclusion of certain cases in which it appeared possible that minor degrees of heart disease might have escaped attention.

*Valvular Lesions.*—In many instances, diagnosis of more than one valve lesion was recorded. The following enumeration was made: mitral stenosis, 119; mitral insufficiency, 127; aortic stenosis, 21; aortic insufficiency, 30; tricuspid stenosis (autopsy confirmation), 1; tricuspid insufficiency, 6. The total number of cases presenting a valve lesion amounted to 230, and the total number of cases without evidence of valve lesion was 201.

*Heart Failure.*—All cases with a recorded diagnosis of heart failure were segregated. To this group were added all records which gave any evidence that some degree of heart failure might possibly have existed. There were 334 cases in this "heart failure" group, leaving ninety-seven cases in the non-heart failure group. Division was made on this basis with the particular object of studying the effect of digitalis in the absence of congestive heart failure, care being taken to exclude questionable cases. It is possible, therefore, that the actual number of cases of failure may have been somewhat less than 334.

*Sex and Age.*—There were 220 males and 211 females in the series. Ten patients were under 20 years of age, seventy under 40, and 150 under 50; 281 patients were 50 years of age or more and 167 were 60 or more. Fifty-five patients were as old as 70.

*Autopsy.*—Autopsy records were included in sixty-eight case histories. Most of them unfortunately followed the usual rule of centering attention on the ventricle, but in eighteen cases it is noteworthy that data were recorded relating to the auricle. The predominant changes were scarring, fibrosis, mural thrombi (some organized) and dilatation.

*Toxemia and Fever.*—In 280 cases there was evidence of toxemia or fever, or both.

*Nervous Factors.*—In a certain number of cases the chief if not the sole factor in the cause of the abnormal rhythm appeared to be of reflex nervous origin. Examples are neuralgia of the fifth cranial nerve, ureteral colic, thrombosis of the lenticular striate artery, and fracture of the skull.

*Cessation of Auricular Fibrillation.*—There were fifty-four cases in which the arrhythmia ceased either temporarily or for the remainder of the patient's hospital residence, in some of which it had begun after admission. Thirty-three were in patients with heart disease, twenty-one in the group without heart disease. These temporary cases were divided roughly into the following subgroups: (a) Recurrent or intermittent cases with so-called spontaneous cessation in which the exact causes of the cessation of the arrhythmia could not be determined. (b) Cessation with quinidine. This group cannot be divided sharply from the preceding group. (c) Cases in which the arrhythmia occurred with a known excitant and ceased with subsidence of

its effect. Examples are onset after administration of vaccine, insulin or digitalis; with an anesthetic, and after operation. In this group should be included those cases of thyrotoxicosis in which the fibrillation stopped after thyroidectomy and perhaps such cases as pneumonia and other intoxications with temporary auricular fibrillation. (d) A few cases of heart failure of moderate degree in which the abnormal rhythm stopped after improvement with digitalis.

*Surgical Operations.*—Operation was performed in forty-eight cases in which auricular fibrillation was present before and at the time of operation. There were two deaths, both after operation. In neither case was there evidence that the auricular disorder was in any way responsible for the fatal outcome, one patient dying of hemorrhage and the other of pneumonia.

*Digitalis.*—Digitalis was administered in 341 cases and was not given in ninety. Taken as a whole, the series, covering a period of about ten years, gives evidence of no consistent policy for determining whether or not to administer the drug in cases of auricular fibrillation. It does show, however, that the proportion of all cases in which digitalis was given was higher in the earlier years, while as time went by there was an increase in the proportion of cases in which the drug was withheld. This applies particularly to cases in which there was no evidence of congestive heart failure. This tendency to give digitalis less regularly in cases of the arrhythmia without heart failure shows that among the staff members auricular fibrillation per se came less and less to be regarded as a specific indication for digitalis but that in cases of auricular fibrillation digitalis administration came more and more to depend on the general indication of congestive heart failure. In certain cases in spite of heart failure digitalis was regarded as contraindicated. In some there had been overdigitalization, in others thyrotoxicosis or other toxemia or some such attendant circumstance as coronary thrombosis was given as the reason for withholding the drug. In still other cases with a recorded diagnosis of heart failure no reason for withholding the drug was given, the physician apparently not having been impressed with any data which might have caused the diagnosis of failure to be entered on the record. All in all, of the ninety instances of auricular fibrillation in which digitalis was not administered, forty were cases of heart failure (or possible heart failure) and fifty were in the non-heart failure group (no suspicion of heart failure).

With the administration of digitalis in cases of heart failure, whether accompanied by auricular fibrillation or not, this study is not concerned. There is general agreement that, except for unusual circumstances, patients with congestive failure accompanied by auricular fibrillation should receive the drug. Authorities almost without exception now agree that other patients with heart failure also should get it. With regard to the indication for digitalis in cases of auricular fibrillation without congestive failure, however, disagreement in opinion if not in practice still exists. It was to the effects of the drug in such cases in this series that our attention was particularly directed.

*Effects of Digitalis in Non-Heart Failure Cases.*—Of the ninety-seven cases without suspicion of congestive heart failure, digitalis was administered in forty-seven and not given in fifty.

In the no-digitalis group were twelve cases of thyroid disease, four of carcinoma, two of cataract, two of hernia, and one each of enlargement of the prostate,

fracture of the skull, diabetes, urticaria, acute yellow atrophy of the liver, neuralgia of the fifth nerve, after vaccine administration, cholecystitis and pulmonary embolism. Twelve cases were listed as "not treated," twenty-eight as "improved," six as "not improved." There were four deaths.

In the digitalis group were seven cases of pneumonia, seven of thyroid disease, four of carcinoma, two of cholecystitis, two of enlargement of the prostate, one each of tabes, mesenteric thrombosis, after insulin administration, cataract, strangulated hernia, fracture of the femur, and tuberculosis of the vertebra. The hospital results showed twenty-eight as "improved," six as "not improved." There were thirteen deaths.

Although the mortality was higher in the digitalis group, it might be argued that this group contained a larger number of extremely ill patients, a postulate difficult of refutation or of substantiation. In at least one instance of intravenous administration death was attributed by the physician to digitalis. In most of the other cases there was little direct evidence that the drug did harm, but neither was there any evidence of any beneficial effect. In none of these cases without heart failure did the record give evidence of any slowing effect on the ventricular rate. In three of the fatal cases there was an acceleration after digitalis. In one (carcinoma of the cecum), 18 cc. of the tincture was administered the day before death; in another (strangulated hernia), 12 cc. of an intravenous preparation administered in twelve hours was followed by 0.1 Gm. daily; in the third (postoperative pneumonia), 1.2 Gm. was given in twelve hours.

#### INTERPRETATION OF RESULTS

Whatever the ultimate factors, it is obvious that the immediate causes of the abnormal auricular movement must be applied to the wall of the auricle, acting on the muscle or nerves (or both). It appears that in most cases heart disease is an important factor, whether its effects are directly or indirectly applied to the auricular wall. That organic heart disease is not necessary to the occurrence of fibrillation is indicated by the fact that it was not present in about 10 per cent of the cases. This occurrence of auricular fibrillation in patients without heart disease is in accord with the recent studies of Fowler and Baldrige,<sup>1</sup> Friedlander and Levine,<sup>2</sup> Orgain and White,<sup>3</sup> and others. While in most cases some pathologic process of the auricular muscle doubtless is an important factor, minor lesions appear to suffice in many instances, and in others nervous factors alone. It has been explained as "the result of a 'trigger phenomenon' of neurogenic origin in many cases."<sup>2</sup> In one of our cases of recurrent fibrillation the patient stated that emotional excitement frequently caused a paroxysm. This is in accord with the long recognized influence of nervous effects as well as direct muscular factors on the production of the circulating wave in the auricle of experimental animals. Certainly the auricular arrhythmia per se can no longer be regarded as implying disease of the ventricle.

Analysis of these cases strongly suggests that, while reflex nervous influences and toxic agents often may be

causative factors, the chief agent in the initiation of the abnormal rhythm in most instances is increase in intra-auricular pressure. The well recognized association of the arrhythmia with mitral valve disease and with congestive heart failure is conspicuous in this series. In explaining the association of fibrillation with mitral stenosis, the valve lesion usually has been regarded as in some way a contributory cause of the arrhythmia, while in explaining the common association of the disorder with congestive heart failure it has been assumed that the arrhythmia is the cause of the failure. Not only does this explanation of heart failure ignore the presence in these cases of such common etiologic factors as infection, strain and diminished blood supply—factors now regarded as prominent causes of failure—but it involves further fallacy. The mere association of two observed phenomena can give no implication of cause and effect in one direction more than in the other, unless supported by collateral evidence. The accumulated evidence indicates that congestive failure as well as mitral disease promotes the initiation of auricular fibrillation. Both tend to increase intra-auricular pressure. Such increase in pressure is known to cause auricular fibrillation in heart-lung preparations<sup>4</sup> and has long been implicated in the clinical<sup>5</sup> explanation of the disordered rhythm.

In this conspicuous association of auricular fibrillation with congestive heart failure we are aware of the impossibility of differentiating cause from effect, a difficulty which appears sometimes not to have been appreciated. In patients who first come under observation with congestive heart failure and auricular fibrillation, it usually is impossible to determine which of the two phenomena was first to occur; but on the basis of experimental and clinical evidence it would appear far more logical to explain the arrhythmia as resulting in part from the increase in intra-auricular pressure attendant on congestive failure than to explain the failure as a result of the abnormal auricular movement. In many patients who have been observed over a period of years, failure is known to antedate the onset of auricular fibrillation. It appears to be the precipitating factor in the initiation of the arrhythmia. In many patients with few evidences of congestive failure it may be the arrhythmia which first attracts attention. In some such instances of early failure the onset of auricular fibrillation may indeed have been a blessing in that it has pointed the way to proper, even if misdirected, therapy. In a recent study of great merit Nahum and Hoff<sup>6</sup> call attention to stretching of the auricle from the pressure of congestive failure as a precipitating cause of auricular fibrillation. They say: "It thus becomes clear why this irregularity is so often associated with heart failure, being rightly regarded as an important evidence of the existence of heart failure." Stoppage of the abnormal rhythm after digitalis in a few of our cases with moderate heart failure suggests that the crucial factor in the restoration of normal rhythm may have been a decrease in intra-auricular pressure consequent on improvement in the circulation from the drug.

Stretching of the auricle alone, however, whether from ventricular failure or from mitral stenosis, usually does not suffice to cause clinical auricular fibril-

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2. Friedlander, R. D., and Levine, S. A.: Auricular Fibrillation and Flutter Without Evidence of Organic Heart Disease, *New England J. Med.* 211: 624 (Oct. 4) 1934.

3. Orgain, E. S.; Wolff, Louis, and White, P. D.: Uncomplicated Auricular Fibrillation and Auricular Flutter: Frequent Occurrence and Good Prognosis in Patients Without Other Evidence of Cardiac Disease, *Arch. Int. Med.* 57: 493 (March) 1936.

4. Kountz, W. B.: Personal communication to the authors.

5. Vaquez, Henri: Diseases of the Heart, Philadelphia, W. B. Saunders Company, 1924.

6. Nahum, L. H., and Hoff, H. E.: Auricular Fibrillation in Hyperthyroid Patients Produced by Acetyl-β-Methylcholine Chloride, with Observations on the Role of the Vagus and Some Exciting Agents in the Genesis of Auricular Fibrillation, *J. A. M. A.* 105: 254 (July 27) 1935.

lation. As a rule it is effective only in cases in which it appears that certain changes have occurred in the auricular wall. The relative rarity of the arrhythmia in children is well recognized even though in them rheumatic heart disease predominates. In our series the association of auricular fibrillation with older age indicates that changes such as are incident to advancing years constitute an important contributory factor. The autopsy reports give the same implication. In view of the great effect of digitalis on ventricular rate in heart failure cases of auricular fibrillation, the failure of the drug to produce slowing in the non-heart failure cases is highly significant. It appears that slowing is related to its beneficial action on the muscle<sup>7</sup> in heart failure—an action whereby the heightened irritability of the musculature is reduced.<sup>8</sup> But it is only on the failing ventricle that digitalis lessens excitability. In toxic cases without failure it may even make the muscle more irritable.

## SUMMARY

Auricular fibrillation may result from various influences acting on the muscle or nerves of the auricle. In some cases muscular effects are chiefly if not wholly responsible; in others nervous factors, direct or reflex, constitute the sole or predominating influence. Ultimate causes include toxemia; various nerve reflexes, central, abdominal, peripheral; nervous or emotional stress; lesions of the auricular musculature, and increased intra-auricular pressure. This study of 431 consecutive cases suggests that the commonest determining factor is increase in intra-auricular pressure from congestive heart failure or from mitral disease, exerted on the wall of an auricle which is the seat of changes such as occur with older age. Congestive heart failure is the commonest cause of auricular fibrillation.

Auricular fibrillation calls for examination. Search should be made for other evidences of toxic or nervous disorder and for other signs of heart failure. In a certain number of older patients the abnormal rhythm may be the first sign of congestive failure to attract attention, and in such instances obviously digitalis is indicated, as in other cases of heart failure. If exact etiologic diagnosis is obscure it may become appropriate to administer digitalis as a therapeutic test, but such experimental administration should no more be confused with specific therapy than should the administration of quinine in cases of unexplained fever. Seldom if ever is auricular fibrillation per se an indication for digitalis.

In non-heart failure cases of the arrhythmia, the administration of therapeutic doses of digitalis produces no slowing of ventricular rate. In a few such cases in this series, digitalis intoxication of greater or less degree was induced, a danger which appears not to be inconsequential if the drug is used in any attempt to slow the rate in toxic cases.

Auricular fibrillation is a result, not a cause, of some disorder that may need treatment. In cases of congestive heart failure with fibrillation the heart failure should be treated as in other cases of failure—with digitalis. In toxic or nervous disorders with the arrhythmia, treatment likewise should be the same as in similar cases with normal rhythm, thyroid disease should receive appropriate therapy, toxemia should be combated, nervous factors allayed. In both classes of cases (with and without heart failure), auricular fibrillation is a sign in diagnosis, not a disease per se.

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8. Gold, Harry: Action of Digitalis in the Presence of Coronary Obstruction, *Arch. Int. Med.* 35:482 (April) 1925.

Occasionally the cause of the arrhythmia cannot be found or controlled, and the symptoms may be so prominent as to call for special therapy. In many such instances the disorder may be obliterated with quinidine.

It is no more correct to administer digitalis regularly on all occasions of fibrillation than it is to perform thyroidectomy, although each procedure is helpful in appropriate cases. A standard pattern of treatment is no more applicable in auricular fibrillation than in enlargement of the liver, in chills, in simple tachycardia or in edema. It is not to the sign but to the disease which produces it that treatment must be directed.

IMMUNITY AND PROPHYLAXIS IN  
POLIOMYELITIS

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It is generally known that poliomyelitis virus possesses a high degree of host specificity, man alone being susceptible to natural infection. With the exception of certain Old World species of monkeys, lower animals of all kinds are refractory to it. Even those species of monkeys which yield to experimental inoculation never contract the disease spontaneously from infected associates. They also are therefore endowed with a fair degree of natural resistance, differing from the natural state in man in that quite artificial conditions must be imposed to induce infection. This difference in susceptibility, incidentally, must be borne in mind in the application of experimental results to man.

The resistance exhibited by naturally refractory animals does not appear to be related to humoral antibodies, for the serum from such animals rarely inactivates the virus in vitro even when a high ratio of serum to virus is employed. On the contrary, it appears to rest largely or wholly on tissue resistance, possibly simply on an indifference on the part of the nerve cells to the presence of the virus.

In those animals which yield to experimental inoculation, marked individual differences in resistance may be recognized. This individuality may be elicited by the use of graded doses of virus and by noting differences in the extent of the paralysis in animals inoculated with the same dose of virus. Epidemiologic and clinical observations suggest that marked individual differences in native resistance exist in man also. There is indeed some justification for believing that an important factor in determining the outcome of an exposure to infection in man is the general level of tissue resistance with which the individual has been naturally endowed, frank paralytic poliomyelitis probably being restricted largely to those members of society whose nerve cells, genetically speaking, are constitutionally inferior so far as resistance to this particular virus is concerned. This is in a measure reflected by the fact that approximately three fourths of normal young adults in urban communities exhibit indirect evidence of naturally acquired active immunity, though it must be admitted that a demonstration of neutralizing properties in the serum of persons not giving a history of the disease does not necessarily mean that these individuals have really acquired actual immunity to the disease as the result of contact with virus. The exceedingly variable clinical course in those who do develop frank poliomyelitis may

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be regarded as further evidence of individual differences in susceptibility to this disease, the more vulnerable individuals apparently being the exception rather than the rule.

While it is a well established fact that naturally acquired active immunity to this disease is commonly associated with humoral antibodies, it is not evident that these play a significant rôle in determining recovery or that they figure largely in the refractory state which follows recovery. Recent investigations have in fact shown quite conclusively that immune serum, even when administered to monkeys in very large doses, does not afford significant protection against virus inoculated by the intranasal route. This failure of the humoral factor to rally to the defense of the body may be explained by the fact that the virus normally gains admission to the central nervous system by the olfactory nerves, the terminals of which lie free on the nasal mucosa and therefore probably are largely or entirely unguarded by humoral antibodies. Once the virus has become established within this portal, it continues to be largely out of the reach of humoral antibodies. This is evidenced by the fact that a very large dose of highly active immune serum administered as early as two days after intranasal inoculation does not in any way alter the course of an experimental infection. It is now known that the virus is a strict neurotrope which travels from one level of the nervous system to another largely or entirely by axonal paths, probably inside neurons and therefore essentially out of the reach of circulating antibodies. Such limited protection as immune serum may afford against subsequent experimental inoculation by the intranasal route (in my experience less than 25 per cent) may be accounted for in part by the fact that the technic of infecting monkeys by this route may result in a local inflammatory response, with possibly sufficient exudation of the immune serum injected to inactivate virus adhering to the mucous surface and furthermore by the fact that monkeys are, in comparison with man, fairly resistant to infection by this route. Since inflammatory exudation is normally not apt to aid man at the time of exposure and since he is more susceptible to natural infection than monkeys, it would appear that humoral antibodies must play little or no rôle in human resistance to this disease.

What significance then is attached to the humoral antibodies which are so commonly associated with naturally acquired active immunity? While the answer is still not entirely clear, there are rather definite indications that they represent merely an adventitious by-product of infection; a general response to virus which has escaped from infected neurons, whether these have been damaged or not, and that the real basis of the immunity which follows infection is not humoral in nature but rests very largely or entirely on a cytoplasmic modification of previously susceptible neurons. In other words, the humoral antibodies are to be looked on as a reflection of the fact that the nerve cells have actually been exposed to the modifying influence of virus, for the modification, whatever its exact nature may be, seems to depend on intimate contact of the neurons with the causal agent. This cytoplasmic modification may not be at all associated with the formation of antisubstances but consists rather of the acquirement of new properties which leave the cells indifferent to the presence of this virus—traces of which may indeed persist for a time in the tissues, as seems to be true in certain other virus diseases.

A clear recognition of these relationships is obviously necessary for an understanding of the problem of creating resistance by artificial means. It is now known that passive immunization is not very effective against infection by the natural route; also that, while some increase in resistance may be brought about by the repeated injection of large doses of active virus over a sufficiently long period, the response to such injections seems to be largely, if not entirely, humoral in nature and is not associated with a significant increase in tissue resistance. What is of great practical importance is that, when the virus has been inactivated by physical or chemical means to make it safe as a vaccine, even the humoral response tends to drop out of the picture.

In the light of these facts the practical problem of creating resistance by artificial means assumes discouraging dimensions. Enough is now known about the pathogenesis and basis of immunity in this disease to justify considerable doubt that its control will ever be solved by means of serums or vaccines. It seems clear that a solution must be sought in new directions and the possibility that a practical solution may lie in a less orthodox direction does not seem entirely out of consideration. Indeed, a new hope has emerged from recent observations by Armstrong and Harrison,<sup>1</sup> Olitsky and his associates<sup>2</sup> and Gebhardt and myself,<sup>3</sup> which indicate that certain essentially harmless chemical agents once thoroughly applied to the olfactory mucosa of monkeys may afford protection against the virus for several weeks to several months thereafter. The substances which fall into this category are varied in composition and include alum, tannic acid, trinitrophenol (picric acid), zinc sulfate<sup>4</sup> and certain dyestuffs. Their modes of action may differ, but the protective effect is nevertheless exhibited in varying degrees by a number of these agents. It is already known that certain ones, once thoroughly applied, may provide protection for as long as three months. Since the protection may last for some weeks, it appears that the effect which they produce is not due to a virucidal action but depends on some modification in permeability of the normal portal of entry. Though by no means fleeting, the effect is temporary, since most animals do succumb in time to repeated intranasal instillation of virus.

From the general facts brought into this review, it seems clear that the trend of future investigations, so far as they relate to personal prophylaxis, should and very likely will center around means of guarding the olfactory area against the establishment of the virus at this point. Since certain chemical agents have already been found to exercise protective action in monkeys, further investigations along this line are clearly indicated. More work needs to be done in an effort to elicit the most satisfactory agent for human application, to determine precisely how the various chemoprophylactic agents act, and to determine the duration of the

1. Armstrong, Charles, and Harrison, W. T.: Prevention of Intranasally Inoculated Poliomyelitis of Monkeys by Installations of Alum into the Nostrils. *Pub. Health Rep.* 50: 725-730 (May 31) 1935; Prevention of Experimental Intranasal Infection with Certain Neurotropic Viruses by Means of Chemicals Instilled into the Nostrils, *ibid.* 51: 203-215 (Feb. 28) 1936.

2. Sabin, A. B., Olitsky, P. K., and Cox, H. R.: Protective Action of Certain Chemicals Against Infection of Monkeys with Nasally Instilled Poliomyelitis Virus, *J. Bact.* 31: 35-36 (Jan.) 1936; *J. Exper. Med.* 63: 877-892 (June) 1936.

3. Schultz, E. W., and Gebhardt, L. P.: Prevention of Intranasally Inoculated Poliomyelitis in Monkeys by Previous Intranasal Irrigation with Chemical Agents, *Proc. Soc. Exper. Biol. & Med.* 34: 133-135 (March) 1936; Chemoprophylaxis of Poliomyelitis, *California & West. Med.* 45: 138-140 (Aug.) 1936.

4. Observations since this paper was read in London indicate that zinc sulfate (from 0.5 to 1 per cent) is the most effective of the agents we have studied thus far; about 95 per cent of a total of fifty-three monkeys have resisted virus inoculated intranasally as long as a month after treatment of the nasal mucosa with this chemical, while about 95 per cent of an almost equal number of untreated controls developed the disease.

protection each affords, together with any harmful effects they may have on the tissues of the individual so protected, which would contraindicate their use. It must, of course, be borne in mind that results obtained in experimental animals are not always directly applicable to man.

While the use of chemical agents in this way may have application against diseases other than poliomyelitis, the possibility should be borne in mind that an agent which is effective in protecting against one virus disease may not necessarily be effective in protecting against another, even though the portal of entry may be the same. This much has already come out of comparative studies on poliomyelitis and St. Louis encephalitis, it being more difficult experimentally to protect against the latter than against the former disease.

That there may not be undue confusion later, it will be important for investigators to compare their observations with reference to a given disease, and certainly important to compare their results in terms of the procedures employed. There must, of course, be no uncertainty as to making good contact with the actual portal of entry, and such factors as the concentration of the agent, the nature of the menstruum, the temperature of the solution at the time of application, the number of applications and the interval between applications will all require careful attention and should be given in detail in publishing observations. It is to be hoped that, with the passage of time, chemoprophylaxis may come to be regarded as an effective aid in the control of this and possibly other virus diseases.

## THE CLINICAL USE AND DANGERS OF HYPNOTICS

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The administration of hypnotics and of sedatives acting on the nervous system represents one of the most frequently used therapeutic procedures in medicine. Millions are spent for the purchase of these drugs and, as the result of popular interest, they are often used without medical supervision. Indeed, their consumption is so widespread that the question has been raised whether they may exert a deleterious effect on an appreciable proportion of the population.<sup>1</sup> In spite of the fact that these substances represent symptomatic remedies of great value, their use is not without danger. When they are administered intelligently, however, and with full knowledge of their pharmacologic and toxicologic properties, their beneficial effects distinctly outweigh the occasional untoward reactions. Instances are also not wanting in which the skilful application of these drugs has saved the patient's life.

There are few questions that recur in the minds of physicians as frequently as the following ones: When and how should hypnotics be used? What are their relative merits and contraindications? How long should their use be continued? How large a dose is it safe to administer? When should they be given by mouth and when parenterally? Will the patient develop a "habit"

from their use? What is their effect on the heart and circulation? Is the sudden change in the condition of the patient following the administration of hypnotics due to the hypnotics or is it independent of them? Answers to these questions can be supplied only (1) through the appreciation of certain general established principles, (2) through specific knowledge bearing on the individual drug and (3) through full understanding of the patient as a psychophysical unit.

My purpose in this presentation is to discuss certain general principles bearing on the use of hypnotics. No attempt is made to describe the pharmacologic and therapeutic properties of individual drugs, as this has been done elsewhere.<sup>2</sup>

### RELATION OF HYPNOTICS TO SEDATIVES, ANALGESICS AND ANESTHETICS

Hypnotics are drugs that induce sleep. Sedatives and analgesics are chemical agents that are supposed to decrease the sensitivity of the central nervous system and diminish or abolish pain. Anesthetics, or narcotics, in the strict sense of the word, are substances that depress the central nervous system, abolishing certain types of sensations. Such a classification, however, is quite arbitrary and unsatisfactory from a clinical point of view because the same drug in varying dosage is used as an analgesic, a hypnotic or an anesthetic. Furthermore, if sleeplessness is caused by pain, an analgesic becomes a hypnotic, and, contrariwise, true hypnotics may act indirectly as anodynes. Finally, some hypnotics, such as tribrom-ethanol, are often used as anesthetics. Hence, sharp separation between these types of drugs, so far as effect is concerned, is not feasible. From a clinical point of view, all drugs that can be administered without unpleasant side action and that decrease the sensitivity of the central nervous system selectively or diffusely are sedatives in the broader sense. Within the group of sedatives there exist substances which in large doses induce sleep with regularity. These drugs are hypnotics.

### TYPES OF SLEEP AND THE CHOICE OF HYPNOTICS

Hypnotics are symptomatic remedies, and they represent only one of the measures that are of aid in inducing sleep. Frequently, psychotherapeutic or physical measures directed at the core of the problem are to be preferred, and hypnotics serve but as adjuvants. An ideally correct selection of a soporific for a given patient will be possible only when both the mechanism of the disturbance of sleep and the manner of action of the drug to be used are known. Much will be accomplished through a better understanding of the interrelations between certain functions of the cortex, the diencephalon and the mesencephalon, on the one hand, and through the better localization of the seat of action of the sedatives and hypnotics, on the other hand.

All that is known today is that in the brain stem there exist areas the physical or chemical disturbance of which can result in an instantaneous sleeplike state.<sup>3</sup> The nervous centers responsible for regulation of con-

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1. Mörchlen, F.: Die Schlafmittelfrage, *Deutsche med. Wchnschr.* 60: 798 (May 25) 1934. Flury, F.: Schlafmittelmisbrauch, *ibid.* 60: 1155 (Aug. 3) 1934.

2. Weiss, Soma: (a) The Therapeutic Indications and the Dangers of the Intravenous Administration of Sodium-Phenyl-Ethyl Barbiturate (Sodium Luminal) and Other Barbituric Acid Derivatives, *Am. J. M. Sc.* 178: 390 (Sept.) 1929; (b) The Indications and Dangers of Sedatives and Hypnotics with Special Reference to the Barbituric Acid Derivatives, *Internat. Clin.* 1: 39 (March) 1936.

3. Hess, W. R.: The Autonomic Nervous System: Sleep as a Regulating Process, *Lancet* 2: 1259 (Dec. 10) 1932. Ferris, E. B., Jr.; Capps, R. L., and Weiss, Soma: Carotid Sinus Syncope and Its Bearing on the Mechanism of the Unconscious State and Convulsions, *Medicine* 14: 377 (Dec.) 1935.

sciousness and sleep are in some respects of parasympathetic character. Although recently acquired knowledge indicates that the different types of hypnotics reach diffusely all portions of the central nervous system,<sup>4</sup> there is nevertheless evidence that certain portions of the brain possess a selective chemical and functional susceptibility to the action of hypnotics. Thus, in spite of the fact that the barbiturates are taken up by all parts of the brain as well as by tissues of other organs, the disturbances of several vegetative functions in barbiturate hypnosis and the antagonistic effects of ephedrine, benzedrine and picrotoxin suggest a special reactivity of centers in the brain stem to this group of drugs. In this somewhat restricted sense there is justification for the division of hypnotics into two groups: one having predominantly a cortical action, such as bromides, paraldehyde, chloral hydrate, bromural and carbromal, and one having a relatively greater effect on the brain stem, such as the barbiturates.<sup>5</sup>

In the clinical selection of suitable hypnotics, an examination of the nature of the sleep habit of the patient is essential. It should be appreciated that sleep requirement varies considerably in normal persons. The refreshing effect of sleep is influenced by the degree of preceding physical and mental exertion, and particularly by emotional conflicts. In addition to the duration and the depth of the sleep, the character of the dream states is an important factor. The depth of sleep, as indicated by the intensity of stimulus required for awakening, is usually two or three times greater during the first two hours than thereafter, when slowly and progressively it becomes superficial.

In examining the more common types of disturbance of sleep, one finds that in persons who are nervously fatigued the difficulty often lies in the disturbance of the onset. Once sleep is established, the normal rhythm will continue. In such patients, mild or more potent hypnotics with short duration of action, such as bromural, carbromal or the sodium salt of *n*-methyl-cyclohexenyl-methyl barbituric acid (evipal), will be effective, with the advantage of no after-effects. In patients whose sleep remains superficial with frequent awakenings, milder hypnotics with relatively long duration of action, such as chloral, chloral hydrate, barbital, dial and phenobarbital, are indicated. In neurasthenic individuals the rapport between physician and patient is often symbolically transferred to the medication; hence even milk or water, with proper suggestion, often is effective. There is, however, a definite physiologic mechanism that is active here. The psychic factor also frequently plays a part in the effect of potent hypnotics. If the cause of disturbed sleep is pain, analgesics such as salicylates, acetophenetidin or codeine, administered alone or in combination with hypnotics, give good results, whereas hypnotics alone are ineffective. If motor restlessness is responsible for insomnia, as in infectious disease, hypnotics with dominant motor depressant effect, such as bromides and the barbiturates, are helpful. If a change is made from one type of hypnotic to another, it should be remembered that a synergism exists in their depressant effect on the vital centers. Hence, a full dose of any hypnotic can be given only after the dose administered previously is adequately eliminated.

These considerations indicate that hypnotics often do not act directly on the "sleep centers" but rather act

indirectly through elimination of the factors interfering with natural sleep. Such indirect induction of natural sleep is always to be preferred to the "forced" action of hypnotics on the nervous mechanism of sleep, as the latter type of sleep, notwithstanding its depth and duration, is not natural and often not refreshing.

#### CLASSIFICATION OF SEDATIVES AND HYPNOTICS

The sedatives and hypnotics are of heterogeneous chemical types. While among members of the same group a certain degree of relationship exists between the chemical structure and pharmacologic effects, no such relationship exists between the various types. Thus, some inorganic salts, just like some complex organic substances, are mild while others are powerful hypnotics; some have a short and others a long duration of action.

Much vogue and fashion exists in the use of sedatives and hypnotics. Today some of the older members of the group, such as acetophenetidin, acetanilid, aldehydes and carbamates, have fallen into undeserved disuse, whereas the more recently introduced drugs, such as the barbiturates, enjoy a popularity not always deserved. One may, with reservations, group the substances frequently used as sedatives and hypnotics, according to increasing therapeutic potency and toxicity, as follows: (1) the acetophenetidins, salicylates and anilids (primarily analgesics); inorganic salts, such as bromides, calcium (analgesic) and magnesium salts; (2) the alcohol and aldehyde groups, as represented mainly by ethyl alcohol, tribrom-ethanol, trichlorisopropyl alcohol, chlorbutanol (trichlortertiary butyl alcohol), on the one hand, and paraldehyde and chloral hydrate (trichloroacetaldehyde), on the other hand; (3) the sulfones, as represented by sulfonmethane and sulfonethylmethane; (4) the ureids, as represented by carbromal (bromdiethylacetylurea) and bromural ( $\alpha$ -monobromisovalerylurea); (5) the barbituric acid derivatives, as represented by a large number of substances, such as amylal, barbital, dial, ipral, neonal, nostal, pentobarbital, phanodorn, phenobarbital and sandoptal; (6) the hydrocarbons, such as acetylene, ethylene, cyclopropane, chloroform and ethyl chloride (used as anesthetics only), and (7) finally the morphine group, as represented by morphine, dilaudid and codeine. Some of these substances are primarily analgesic and do not possess a direct hypnotic effect, but they are often used as hypnotics because of their analgesic effects.

*Chemical Structure and Pharmacologic Action.*—There are a large number of hypnotics used in medicine, and the number of their theoretical possibilities is unlimited. Within the barbituric acid group alone, more than thirty preparations are available. These barbiturates, often recognized only through their trade names, are closely related both in chemical structure and in pharmacologic action. By altering the character of the side chains of their chemical structure, the main differences induced are (1) in the therapeutic and toxic doses, (2) in the induction and recovery times and, finally, (3) in the duration of sleep or persistence of action. The fact that the therapeutic dose of one substance is smaller than that of another does not indicate that the hypnotic is a better or a safer one. It is rather the ratio between the hypnotic and the toxic or fatal dose that is one of the important measures of pharmacologic fitness.

In spite of the fact that a certain type of chemical alteration tends to produce a certain type of change in the pharmacologic action, exceptions are not uncom-

4. Koppansy, Theodore; Dille, J. M., and Krop, Stephen: *Studies on Barbiturates*. VIII. Distribution of Barbiturates in the Brain, *J. Pharmacol. & Exper. Therap.* 52: 121 (Oct.) 1934.

5. Pick, E. F.: *Die Grundlagen der Schlafmittel-Therapie*, *Fortschr. d. Therap.* 6: 161 (March 25) 1930.

mon. Hence, careful pharmacologic and therapeutic study of each member is essential. The following examples will serve to illustrate the changes in pharmacologic effects resulting from simple chemical alterations: While the methyl sulfones and methyl barbiturates are practically inert, the introduction of ethyl radicals creates a potent hypnotic effect. As far as the barbiturates are concerned, the longer the alkyl side chain, the greater in general are the hypnotic and toxic effects. Moreover, the saturation of the side chain has a significant effect on the behavior of the barbiturates in the body. The unsaturated members are inactivated by the liver and hence usually have a shorter duration of action, while the saturated barbiturates are eliminated more or less unaltered by the kidney and usually act over a longer period of time. Thus the intravenous administration of *n*-methyl-cyclohexenyl-methyl barbituric acid (evipal), containing a "heavy" side chain which readily disintegrates in the body, produces hypnosis measured in minutes, while a corresponding dose of diethylbarbituric acid (barbital) or phenylethyl barbituric acid (phenobarbital), substances which are not metabolized, can cause sleep of many hours' duration. Equally striking changes in biologic action can be induced by the introduction of or changes in halogen atoms. The difference in the effect of ethyl alcohol and of tribrom-ethanol is an outstanding example of such a change in chemical structure and pharmacologic effect.

#### ADMINISTRATION AND DOSAGE

Administration of hypnotics should be by mouth unless this is not feasible or is contraindicated. When oral administration is not possible, a soluble preparation may be given rectally by means of a starch enema. In patients with ulcerative lesions of the stomach or the duodenum, irritative hypnotics, such as chloral and chloral hydrate, should not be given by mouth. Some of the special indications for parenteral administration are delirium with threatening circulatory collapse especially if the patient resists oral or rectal administration, convulsive seizures from local anesthetics, grand mal seizures, tetanus with a tendency to marked spasms and convulsions, and severe cases of eclampsia. For parenteral use, paraldehyde and the barbituric acid derivatives are particularly suitable. As these drugs are irritant when given subcutaneously, they should be administered intramuscularly or intravenously. Intravenous injections should be given slowly, in the form of a relatively dilute solution.

Dosage is a relative amount of a drug essential for a desired therapeutic effect. Depending on the effect desired, some of the hypnotics are used in as widely varying a range as from 1 to 30. It holds true for all hypnotics that the more irritable the central nervous system, the greater is the dose required to induce sleep. Thus, in nervously fatigued persons, phenobarbital is used effectively in doses of 30 mg. (one-half grain) to enhance the natural tendency to sleep. In the presence of convulsions, on the other hand, doses of 1 Gm. (15 grains) or more are required to abolish the seizure and induce sleep. Any intense stimulus acting on the central nervous system can, within limits, counteract the effect of sedatives and hypnotics of all sorts. Contrariwise, if external and internal stimuli influencing the patient are reduced or eliminated, the effective dose will be smaller. It is for this reason that establishment of the general comfort of the patient through good nursing is always an effective adjuvant of drug sedation. The administration of large doses of

sedatives is justified only in serious emergencies, as previously indicated, and is attended with potential dangers.<sup>2</sup> One such inherent danger is the fluctuation in the state of irritability of the central nervous system. Thus, in order to overcome a convulsive seizure a relatively large dose of a hypnotic is essential. Following the cessation of the fit, however, the irritable state of the nervous system decreases, and frequently depression follows. In the latter state, then, the therapeutic dose administered under the former conditions becomes toxic.

In selecting the time of oral administration of hypnotics, the induction period is a determining factor. Certain hypnotics with a short induction period, such as chloral hydrate, paraldehyde, bromural, amylal and pentobarbital, can be taken effectively from one-half to one hour before retiring; others with a longer induction period, such as barbital, dial, ipral, phenobarbital and sulfonmethane, should be administered from one to two hours before the effect is desired.

The frequency of repetition of the dose depends on clinical indications and on the duration of action of the drug, and also on the patient's condition. Thus, in the presence of pain or muscular spasm, such as exists in tetanus, large doses of hypnotics with long duration of action may be efficacious for but three hours, while the same amount consumed by a normal person can produce deep sleep of several days' duration. Effort should always be made to discontinue the medication as soon as feasible. In case of prolonged use, it is preferable to change to other drugs of the same group or to another type of drug. It is also advisable not to prescribe hypnotics for more than two or three weeks without medical supervision. Such a procedure safeguards against the use of drugs for suicidal purposes.

#### UNTOWARD EFFECTS

Susceptibility to hypnotics depends partly on innate, partly on acquired, characteristics of the patient. Persons with sensitive and unstable nervous systems are particularly susceptible to the action of these drugs. Patients with anemia usually require smaller doses to achieve a given effect. As the detoxification and elimination of hypnotics are usually accomplished by the liver and kidneys, disease of these organs is frequently associated with increased susceptibility. Thus, the unsaturated barbituric acid derivatives, which are detoxified by the liver, can show intensified and prolonged action in the presence of diseases of the liver. I have observed two instances of poisoning with *n*-methyl-cyclohexenyl-methyl barbituric acid (evipal) of six and eight hours' duration in patients with liver disease following a dose which in a normal person would have a hypnotic effect for about twenty minutes. Other hypnotics that are not detoxified in the liver but are eliminated by the kidneys, such as bromides, barbital and phenobarbital, induce prolonged action in the presence of impaired renal function. It should also be borne in mind that regardless of through which organs hypnotics are metabolized or eliminated, inactivation is always dependent on an efficient circulation. Hence, in the presence of circulatory failure or collapse, effective elimination becomes seriously impaired and the hypnotic will remain active longer. Such prolonged action will then, in turn, add to the disintegration of the circulation, finally resulting in a vicious circle. This explains why drugs with a relatively short duration of action, such as tribrom-ethanol, can, in the presence of "shock," cause sleep of several days' duration. This is also one

of the main reasons why nonvolatile anesthetics are potentially dangerous agents in surgical practice.

When such pathologic states exist, particular precautions must accompany the use of hypnotics. Their careless use in peripheral circulatory failure, as judged from personal observations, is frequently responsible for fatalities, while the danger from direct action of hypnotics on the heart, often feared by physicians, is a negligible factor. In small therapeutic doses, hypnotics do not exert a detectable harmful effect on the heart.

**Habit Formation and Addiction.**—The evaluation of this problem is difficult, mainly because of the confusion that exists in the definition of terms. If one defines addiction as a bodily state which results in demonstrable disturbances of certain vegetative functions, such as occur after the withdrawal of morphine in habitués, then the commonly used hypnotics do not lead to addiction. On the other hand, it is common to find that, after prolonged administration of the members of the alcohol, aldehyde, urea or barbituric acid groups, patients crave their further use, and nervous disturbances may appear when they are discontinued. In this sense habit formation after the prolonged use of hypnotics is common. How far such habit formation is specific to the drug and how far it bears on the innate state of the patient it is difficult to judge. The prolonged use of these drugs is most common in individuals with emotional and mental difficulties, the very types of patients in whom not only formation of habits by suggestion but also development of conditioned reflexes occur with ease. Some of these subjects can acquire a habit to pink colored water if proper psychic influence is attached to its use. It is certain that in the majority of such instances the habit formation is psychologic. Nevertheless, in view of the fact that the difficulty experienced by the patient is practically identical regardless of whether the source of the habit is psychologic or chemical, every precaution should be taken to prevent the development of habit formation.

**Idiosyncrasy.**—Certain aspects of this problem bearing on susceptibility have already been discussed. Untoward reactions associated with confusion, lassitude, headache and accentuation of existing emotional states may occur after relatively large doses of any hypnotic, particularly in nervously hypersensitive persons. I have on several occasions observed that such drugs temporarily accentuated manic-depressive or paranoiac tendencies in subjects with mild psychopathic personalities. In some of these patients the transient psychotic state seen after relatively large doses of hypnotics becomes established years later. Similarly, it is not rare in hospital practice to observe that confusion and psychotic tendencies become accentuated in patients with cardiac decompensation or infectious or certain deficiency diseases following attempted sedation with paraldehydes, chloral hydrate or the barbiturates.

Sometimes, then, under the effect of hypnotics, the underlying and heretofore partially controlled mental aberration becomes aggravated or brought to the surface from a subclinical stage. Such untoward effects precipitated by hypnotics are often not recognized, and the condition is aggravated by the further increase or repetition of the drug. It is difficult to state whether one type of hypnotic has a greater tendency to precipitate such conditions than others. Delirium precipitated by morphine may subside when barbiturates are administered, and toxic psychosis accentuated by a barbiturate may disappear after the administration of paralde-

hyde. One cannot generalize, however, but usually under such circumstances it is advisable to discontinue drug therapy and apply physical measures.

I have observed, as have Castin and Gardien,<sup>6</sup> patients with psychoneurotic personalities and insomnia in whom barbituric acid derivatives apparently precipitated ill defined, severe pain in the muscles or joints. The pain may be intense, particularly in the early hours of the morning, and may last for days or weeks after the drug has been discontinued. It is localized most frequently over the neck, shoulder and scapular regions and in the arms, and may appear in paroxysms.

In recent years dilaudid (dihydromorphinone hydrochloride) has been widely used as a morphine substitute. This drug is frequently utilized under the misconception that it is safer than morphine and that addiction does not develop. The pharmacologic and chemical evidence thus far available, however, suggests that the ratio between effective and toxic doses of morphine and of dilaudid, respectively, is essentially the same.<sup>7</sup> While tolerance to dilaudid develops with somewhat less ease than tolerance to morphine, nevertheless addiction to this drug has been reported. Although dilaudid may offer some advantage over morphine under special indications, the optimistic expectation and careless use that followed its earlier clinical trial are not justified.

Idiosyncrasy in the form of allergic or allergic-like reactions also may develop. This is apt to occur in patients with a tendency to asthma, angioneurotic edema, urticaria and severe menstrual difficulties. The presence of liver or renal abnormality can accentuate such tendencies. Among these reactions are the skin lesions precipitated by the bromides; toxic hepatitis following the administration of chloral, chloral hydrate or paraldehyde, and swelling of the eyelids, cheeks and lips, erythema and other exudative skin lesions, and, rarely, exfoliative dermatitis following the use of relatively small amounts of phenobarbital, allyl-isopropylbarbituric acid with aminopyrine and other barbituric acid derivatives. Pronounced reduction of blood platelets with hemorrhagic manifestations may develop from sensitivity to allyl-isopropylacetylurea (sedormid). I have observed two instances of such purpura. Purpura associated with increased capillary permeability and without hemorrhage from mucosae and reduction of platelets apparently may rarely result from chloral and paraldehyde. Agranulocytic angina has been precipitated by aminopyrine, but evidence is lacking so far to indicate that any one of the barbiturates alone is responsible for the precipitation of this condition.

#### CHRONIC INTOXICATION FROM PROLONGED MEDICATION

If doses of hypnotics are repeated before complete inactivation or complete elimination has taken place, nervous manifestations will appear as a result of the slow accumulation. Some of the features of chronic intoxication are the same regardless of the hypnotic administered; for example, a gradual loss of ambition, impairment of capacity for concentration and increasing desire to sleep. With certain types of hypnotics, particularly of the barbituric series, bizarre disturbances of the nervous system can develop which, if not recognized, can offer puzzling diagnostic problems. Chronic

6. Castin, P., and Gardien, P.: *Althralgies et myalgies barbituriques*, Presse méd. 42: 1536 (Oct. 3) 1934.

7. Eddy, N. B.: *Dilaudid (Dihydromorphinone Hydrochloride)*, J. A. M. A. 100: 1032 (April 1) 1933. *Dilaudid (Dihydromorphinone): A Review of the Literature and a Study of Its Addictive Properties*, U. S. Public Health Rep. supp. 113, U. S. Gov. Printing Office, Washington, 1935.

barbiturate poisoning, which nowadays is by far the most frequently observed chronic intoxication due to hypnotics, may manifest itself in vertigo, ataxia, nystagmus, visual hallucinations, difficulties with visual accommodation, thick speech, difficulty in the use of or paralysis of the limbs, or tremor. Suppression of the normal reflexes and appearance of changes in the pyramidal tract can complicate the clinical picture. The manifestations at times closely simulate the picture of epidemic encephalitis, pseudobulbar palsy, acute psychic depression, delirium tremens and cerebral vascular thrombosis. The heart is not affected, but there may be a tendency to pulmonary congestion. Rarely, albumin and casts appear in the urine. These manifestations disappear after discontinuance of the drug, though it may take two weeks or longer for complete recovery. This rather long period, out of proportion to the time required for chemical elimination of the drug, suggests that chronic intoxication consists not only in lack of elimination of the drug but also in a toxic effect on the structure of the nerve cells. Experimental evidence supports such a contention.<sup>8</sup> The appearance of chronic intoxication does not necessarily indicate the complete abandonment of medication; it rather makes desirable the better regulation of the dosage or the change to a preparation that has a shorter duration of action.

#### ACUTE POISONING

Acute poisoning seldom occurs as a result of individual susceptibility or following the administration of large therapeutic doses of hypnotics. It more frequently is due to ingestion of massive doses taken by mistake or with suicidal intent. In order to avoid accidental poisoning, it is advisable to instruct patients and their relatives not to keep bottles containing hypnotics at the bedside. During sleep, or during the accentuated confusion and reduced inhibition following the taking of a therapeutic dose, patients may unintentionally or subconsciously take toxic amounts. The use of hypnotics, particularly the barbiturates, is becoming the vogue in suicidal attempts. In view of the fact that the efficacy of the treatment of poisoning from barbiturates and other hypnotics is increasing, and since no permanent disability follows these intoxications, such a change in the trend toward suicide with hypnotics is welcomed, because the prognosis is better than with similar attempts with other chemicals, such as mercury, phosphorus and saponated solution of cresol.

The differences in the behavior of patients intoxicated with various types of hypnotics are inadequate for the clinical diagnosis of the nature of poisoning. This should be determined through circumstantial and preferably through chemical evidence. The clinical course of intoxication is always potentially treacherous. The primary danger in acute intoxication is the derangement of vital nerve centers and, as a consequence, circulatory collapse. In addition, several of the hypnotics are capillary poisons and change their permeability. Some, such as chloral hydrate and paraldehyde, possess a relatively greater depressant action on the vasomotor system than others, like the barbiturates, and circulatory collapse can develop unexpectedly and with great rapidity. The full development of the intoxication may take some time, because nausea closes the pylorus and thus retards absorption. In addition, as has already been indicated,

if there is a tendency to vasomotor collapse the inactivation of hypnotics becomes impaired and their action is prolonged and intensified. It is of practical significance that their depressant effect on the circulatory system is to some extent independent of their effect on the nervous system. Thus it is common experience to observe impairment of the peripheral circulation in pulmonary congestion and the development of a fatal bronchopneumonia days after the patient has regained consciousness. These late complications bear pertinently on the care of these patients.

The fatal dose of a hypnotic varies considerably depending on factors already discussed. We<sup>9</sup> have shown elsewhere the synergistic and antagonistic relationship that exists between the state of the respiratory center and the action of respiratory stimulants on the one hand and the action of depressants on the other. As far as the barbiturates are concerned, it has been stated that even small average hypnotic doses can cause dangerous or fatal reactions in organically normal subjects. Gillespie<sup>10</sup> has recently examined the literature and concluded that there is no case on record in which either a single dose or repeated doses of average therapeutic magnitude have caused death in the absence of complicating factors. This obviously does not refer to the rare instances of fatal skin reactions.

*Treatment.*—In instances of mild intoxication, withdrawal of the hypnotic alone relieves the symptoms. The principles of treatment of severe intoxications are (1) removal of the hypnotic from the gastro-intestinal canal, (2) counteraction of the depressant action on the central nervous system, (3) prevention and treatment of circulatory collapse and its secondary complications, and (4) specific measures.

Gastric lavage should be performed with rather warm solutions, even if the patient is attended several hours after the ingestion of the drug, because absorption from the stomach may become slow with the onset of coma. Furthermore, a warm solution in the stomach is an effective general stimulant and supplies body heat, which is often disturbed under such conditions. The head should be kept low during and after lavage in order to prevent aspiration pneumonia, a not infrequent cause of death in an otherwise responsive type of case. Before the removal of the stomach tube, from 30 to 60 cc. (1 to 2 ounces) of a 50 per cent magnesium sulfate solution should be left in the stomach. With disturbed heat regulation, proper covering and heaters should be placed along the extremities. As a preventive of hypostatic congestion of the lungs and pneumonia, the body should be turned from one side to the other at approximately hourly intervals. An adequate amount of fluid should be administered, and for caloric supply intravenous dextrose solution may be given. If pulmonary congestion or vasomotor collapse exists, from 50 to 100 cc. (2 to 3 ounces) of 50 per cent dextrose solution should be infused intravenously.

The underlying principle of the drug therapy of poisoning with hypnotics is the administration of substances that increase the excitability of the central nervous system, particularly of those centers on which the hypnotics in question act predominantly. Caffeine, pyridine-betacarboxylic acid, diethylamide (coramin) and

9. Norris, V. H., and Weiss, Soma: *The Pharmacological and Therapeutic Properties of Alpha-Lobeline: A Comparison of Its Action on the Respiratory Center with That of Other Respiratory Stimulants*, J. Pharmacol. & Exper. Therap., **31**: 43 (May) 1927.

10. Gillespie, R. D.: *Discussion on the Uses and Dangers of the Hypnotic Drugs Other than Alkaloids*, Proc. Roy. Soc. Med., **27**: 504 (Feb.) 1934; *On the Alleged Dangers of the Barbiturates*, Lancet **1**: 337 (Feb. 17) 1934.

8. Pickworth, F. A.; Young, H. M. A., and Willcox, W. H.: *Clinical and Pathological Effects of Hypnotic Drugs of Barbituric Acid and Sulphonal Groups*, Proc. Roy. Soc. Med. (Sect. Therap. & Pharm.) **20**: 13 (July) 1927.

strychnine are the drugs most frequently used. The effectiveness of these drugs has been demonstrated experimentally in such varying types of intoxication as those caused by morphine, chloral hydrate, tribromethanol and the barbiturates. Their dosage depends on the depth of the depression of the central nervous system. The improvement of the circulation following the administration of these substances is not due to direct action on the heart but rather to action on the vasomotor centers. Through the improved peripheral circulation, the detoxifying capacity of the body becomes increased; hence these drugs are more than symptomatic "awakening" remedies. The disadvantage of coramin is that the persistence of action is brief.<sup>11</sup> Haggard and Greenberg<sup>12</sup> have shown the efficacy of strychnine in experimental phenobarbital poisoning, and successful treatment of poisoning in man has been reported.<sup>13</sup> In severe types of poisoning I have administered strychnine at hourly intervals intravenously or subcutaneously, in doses up to 10 mg. (one-sixth grain). As improvement occurred the dosage was gradually decreased to 1 or 2 mg. ( $\frac{1}{60}$  to  $\frac{1}{30}$  grain). Ephedrine and related substances, such as benzedrine, can counteract sleep and stimulate centers in the brain stem. This action is beneficial in the treatment of experimental intoxication with hypnotics.<sup>14</sup> In severe barbituric poisoning I<sup>2b</sup> have administered from 15 to 30 mg. (one-fourth to one-half grain) of ephedrine intravenously or intramuscularly at two-hour intervals, alternating every hour with strychnine. Purves-Stewart and Willcox<sup>15</sup> have advocated in barbitol poisoning repeated drainage of the spinal fluid through lumbar puncture, taps, or preferably through cisternal drainage. According to these observers this procedure hastens the removal of the drug from the central nervous system and especially from the vital medullary centers, which are bathed by the poison in relatively high concentration. I have used this procedure as an adjuvant in the treatment of poisoning with saturated barbiturates such as barbitol and phenobarbital, which are not inactivated within the body and hence are present in relatively high concentration in the spinal fluid.

#### CONCLUSION

These are, then, some of the general aspects of the clinical problem of the hypnotics. For the skilful use of these substances, additional specific knowledge bearing particularly on the pharmacologic characteristics of individual hypnotics and on the clinical evaluation of the patient is essential. The effective use of hypnotics demonstrates the necessity of knowledge of clinical as well as of biologic sciences in the daily work of the physician.

In clinical practice, the use of a few well selected and well studied hypnotics included in the United States Pharmacopeia or accepted by the Council on Pharmacy and Chemistry of the American Medical Association will yield better therapeutic results than the use of a large number of poorly understood hypnotics.

Boston City Hospital.

11. Killian, Hans: The Use of Coramin for Combating Poisoning from Narcotics and Hypnotics, from an Experience of over 200 Cases, *Anesth. & Analg.* 14: 23 (Jan.-Feb.) 1935.

12. Haggard, H. W., and Greenberg, L. A.: Antidotes for Strychnine Poisoning, *J. A. M. A.* 98: 1133 (April 2) 1932.

13. Weiss, Soma: Indications and Dangers of the Use of Barbituric Acid Derivatives, *Am. J. M. Sc.* 188: 729 (Nov.) 1934.

14. Raginsky, B. B., and Bourne, Wesley: The Action of Ephedrine in Avertin Anesthesia, *J. Pharmacol. & Exper. Therap.* 43: 209 (Sept.) 1931.

15. Moritsch, P.: Ueber die Wirkung von Weckmitteln auf die Basisarkose, *Arch. f. exper. Path. u. Pharmacol.* 168: 249, 1932.

15. Purves-Stewart, James, and Willcox, William: Cisternal Drainage in Coma from Barbitone Poisoning, *Lancet* 1: 500 (March 10) 1934.

#### ABSTRACT OF DISCUSSION

DR. CHAUNCEY D. LEAKE, San Francisco: Is there any clinical advantage in utilizing the difference of action in drugs, such as the salicylates, which act by virtue of pulling fluid out of congested areas, and those, such as the morphine derivatives, which depress sensory pain perception? The first type would seem preferable in congestive pain, while the second would seem more useful in traumatic pain.

DR. SOMA WEISS, Boston: The difference in relieving pain with the aid of various types of analgesics is difficult to evaluate from clinical experience. All one can say is that in milder pain, especially the neuralgic type, salicylates or the acetophenetidin group may be very useful. In more severe pain my associates and I are using members of the morphine group. Whether any differentiation can be made in clinical medicine on the basis of pharmacologic action, I am not certain. In connection with this question I wish to emphasize once more that if the patient has pain and as a result suffers from sleeplessness, he may continue to be disturbed for weeks when hypnotics alone are administered, but when hypnotics such as the barbituric acid derivatives are combined with analgesics such as codeine one-half grain (0.03 Gm.) and, in addition, with an average dose of salicylates or acetophenetidin, remarkable improvement in sleep and the disappearance of the pain may result. Therefore, I believe that the intelligent and skilful combination of hypnotics and analgesics has a distinct place in medicine.

#### PRIORITY AMONG AMERICAN PHYSICIANS IN DEMONSTRATING THE CAUSE OF GRAIN ITCH

TARDY CREDIT THEREFOR GIVEN TO  
DR. LYMAN TALMAGE RAWLES

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Several years ago, in collecting medical and entomologic data for a professional paper, I<sup>1</sup> incidentally acquired the suspicion that, owing to certain unfortunate omissions and errors for which the original investigator himself was only partly responsible, credit for priority among American physicians in demonstrating the cause of grain itch had been given to the wrong men. Careful investigation, by way of literary research, correspondence and personal interview, transformed the suspicion into a firm conviction. I resolved that, when time permitted, I would review the relevant facts and give "credit where credit is due." Hence this paper.

#### HISTORY OF DERMATITIS FOLLOWING CONTACT WITH GRAIN OR STRAW, AND OF AN APPARENTLY ASSOCIATED MITE

It would lead quite beyond the scope and the scientific requirements of this paper to reproduce here in detail the vague and shadowy history of the dermatitis and of the apparently associated mite that, during the eighty years preceding 1909, intermittently engaged the troubled attention of laymen and the puzzled attention of physicians in Europe and America. That history has already been presented in sufficiently full outline by Webster,<sup>2</sup> Schamberg,<sup>3</sup> Rawles,<sup>4</sup> Stelwagon and

1. Kittredge, H. E.: Grain Itch—Report of Two Cases Occurring in a Small Epidemic, *Virginia M. Monthly* 60: 357 (Sept.) 1933.

2. Webster, F. M.: (a) A Predaceous and Supposedly Beneficial Mite, *Pediculoides*, Becomes Noxious to Man, *Ann. Entomologic Soc. of America* 3: 15 (March) 1910; (b) A Predaceous Mite Proves Noxious to Man, circular 118, *Bur. Ent.*, U. S. Dept. Agriculture, April 23, 1910.

3. Schamberg, J. F.: Grain Itch (Acarodermatitis Urticarioides): A Study of a New Disease in This Country, *J. Cutan. Dis.* 28: 67 (Feb.) 1910.

4. Rawles, L. T.: Dermatitis *Pediculoides Ventrucosus*; Synonym, Grain Itch, *Indiana State M. J.* 3: 351 (Sept. 15) 1910.

Gaskill<sup>5</sup> and others. It is therefore necessary to sketch here so much only of the history referred to as is requisite to a clear understanding of the subsequent sections of this paper.

*History in Europe.*—Dermatitis in laborers who had handled sacks of wheat or barley, or who had been in contact with the straw of those cereals, was observed by Lagreze-Fossat and Montane in France in 1849, by Robin in that country in 1867 and 1872, by Targioni-Toizzetti in Italy in 1875, by Geber in Hungary in 1879, by Koller in the same country in 1882 and by Flemming in Germany in 1884.<sup>6</sup>

Webster stated that the cases observed by Lagreze-Fossat and Montane and by Robin were due to *Pediculoides* [*Acarus*] *tritici* Lagreze-Fossat (1851) and that it "would seem quite probable" that the mite involved in the cases described by Geber was *Pediculoides ventricosus* Newport (1850). As to the cases observed by Koller and Flemming in Hungary and in Germany, respectively, Webster was less certain; but, since the Angoumois grain moth (*Sitotroga cerealella*), hereinafter shown to be a frequent host of *Pediculoides ventricosus*, is a very common pest in those countries, he suspected that the same mite was responsible.

Lastly, at the tenth meeting of the Italian Dermatologic Association, held in Rome in December 1908, Ducrey<sup>7</sup> and Sberna<sup>8</sup> presented papers showing that a certain epidemic of dermatitis was caused by *Pediculoides ventricosus* in wheat.

*History in America.*—American observations of dermatitis following contact with straw antedate the European. An itching eruption in persons who had slept in barley straw beds was noted in Massachusetts in 1829, 1831 and 1845, and in New York in 1879. There was no suspicion that a mite was responsible for the condition, the cause being assigned to certain grain parasites easily visible to the naked eye, such as *Meromyza americana* and *Isosoma hordei*, hereinafter mentioned as hosts of *Pediculoides ventricosus*. In much the same way as malarial fever was attributed to the "night air" itself, not to the plasmodium carried by mosquitoes in that air, so the dermatitis was attributed to the wholly innocent parasites of the wheat and the barley. And why not? For when the infesting *Meromyza* and *Isosoma* were burned with the straw, the dermatitis disappeared!

*First American Clinical Observation of the Mite.*—According to Webster,<sup>2</sup> the first American observation of *Pediculoides* itself in connection with the malady was made by Dr. Henry Skinner of Philadelphia about 1894 or 1896. The owner of a suburban boarding house, many inmates of which had been attacked by a "rashlike disease," supposed to have been contracted from their beds, submitted straw dust and debris from the mattresses of the suspected beds. On examination, Dr. Skinner found specimens of the mite. No further investigation was made.

*First Clinical Description of the Dermatitis.*—The next important event in the history of the condition occurred in 1901, when Schamberg<sup>9</sup> gave the first

clinical description, in a paper entitled "An Epidemic of a Peculiar and Unfamiliar Disease of the Skin." That contribution, although admirably crystallizing the previous vague and fragmentary accounts of the malady into a definite clinical entity recognizable by physicians, failed to assign a parasite or other agent to the etiologic rôle.

*History and Description of the Mite.*—In 1849 Mr. George Newport<sup>10</sup> of England discovered in the nest of a wasp (*Anthophora retusa*) at Gravesend a mite that he called *Heteropus ventricosus*, describing it in a paper read before the Linnaean Society of London, March 5, 1850, and published, according to Kappel,<sup>11</sup> on October 18 of the same year. As the genus *Heteropus* was preoccupied, Targioni-Toizzetti,<sup>12</sup> in 1875, substituted the generic name *Pediculoides*; hence the present entomologically recognized nomenclature, *Pediculoides ventricosus* Newport (1850).

It is, according to Banks,<sup>13</sup> a true mite, of the class Arachnida, order Acarina, superfamily Sarcoptoidea, family Tarsonemidae, genus *Pediculoides*. Its synonyms, as listed by Carazza,<sup>14</sup> are *Heteropus ventricosus* Newport, 1850; *Acarus tritici* Lagreze-Fossat, 1851; *Physogaster larvarum* Lichtenstein, 1868; *Sphaerogyna ventricosa* Laboulbene e Megnin, 1885; *Pediculoides tritici* Targioni-Toizzetti, 1878.

It should be pointed out that, although Reuter<sup>15</sup> cited *Pediculoides ventricosus* Newport (1850) as a good species and made no mention of *Acarus tritici* Lagreze-Fossat (1851), and that although Carazza<sup>14</sup> named not only the latter but nearly all of the other alleged itch-producing grain mites as synonyms of *Pediculoides ventricosus* Newport (1850), there is still some doubt whether the latter is the only grain-infesting mite capable of causing grain itch. Thus Banks<sup>16</sup> in 1909, reporting on the *Pediculoides* that Schamberg and Goldberger had proved to be the cause of the disease in the cases studied by them, stated not that the incriminated mite was *Pediculoides ventricosus* Newport (1850) but that it was "very close to, if not identical with, the *Pediculoides ventricosus*."

With this and similar doubt-inspiring statements in mind, I recently appealed to Dr. H. E. Ewing of the Bureau of Entomology, than whom there is in the United States no higher authority on Acarina. Dr. Ewing responded as follows:

The only points in regard to the identity and proper scientific name of the American grain itch mite that I care to pass upon are the following:

1. All specimens of *Pediculoides* that I have examined, taken from man as suspected of attacking man, are *Pediculoides ventricosus* (Newport).

2. I have never been able to separate *Pediculoides* [*Acarus*] *tritici* Lagreze-Fossat from *Pediculoides ventricosus* (Newport). However, having never seen the types of either, I am in no position to say that they are the same.

I hope some European worker can straighten out the confusion existing between these species. It is a more fitting problem for one of them.

This frank and authoritative pronouncement leaves the matter in much the same status as before: The mite

5. Stelwagon, H. W., and Gaskill, H. K.: A Treatise on Diseases of the Skin, ed. 9, Philadelphia and London, W. B. Saunders Company, 1923, pp. 1242 (footnote), 1243 (footnote).

6. These authors were cited by Webster.<sup>2a</sup>

7. Ducrey, A.: Acariasi da grano, in forma epidemica, dovuta al *Pediculoides ventricosus* (con presentazione di preparati di acari), Gior. ital. d. mal. ven., Milano 50: 97, 1909.

8. Sberna: Telle Dermatosis accidentale da acari della tignole del grano (*Pediculoides ventricosus*), Gior. ital. d. mal. ven., Milano 50: 126, 1909.

9. Schamberg, J. F.: An Epidemic of a Peculiar and Unfamiliar Disease of the Skin, Philadelphia M. J. 8: 5 (July 6) 1901.

10. Newport, George: Further Observations on the Habits of *Monodonteomys*, with Some Accounts of a New *Acarus*, *Heteropus Ventricosus*, a Parasite in the Nests of *Anthophora Retusa*, Proc. Linn. Soc. London (November 1848-June 1855), (42) 2: 70.

11. A. W. Kappel in 1896a gives the date of issue of No. 42, which contains Newport's article, as Oct. 18, 1850. According to this, the specific name *ventricosus* Newport, 1850, would have priority by a year over *tritici* Lagreze-Fossat, 1851.

12. Targioni-Toizzetti, cited by Schamberg.<sup>3</sup>

13. Banks, Nathan, quoted by Schamberg.<sup>3</sup>

14. Carazza, D.: Parassitologia animale, ed. 2, 1922.

15. Reuter, Enzo: Acta Societatis Scientiarum Fennicae 36: 185, 195, 1909.

16. Banks, Nathan, quoted by Schamberg and Goldberger.<sup>17</sup>

described by Newport<sup>10</sup> causes grain itch; but whether it is the same mite that Lagreze-Fossat described a year later and, therefore, whether a mite that causes grain itch should be invariably called *Pediculoides ventricosus* Newport, are still uncertain. However, following the established American usage, the entomologic nomenclature employed in this paper as connoting the cause of grain itch will be *Pediculoides ventricosus* Newport.

This *Pediculoides* was recognized and entomologically identified, probably for the first time in America, by Webster<sup>2</sup> in 1882, while investigating, in southern Illinois, the ravages of the Angoumois grain moth, a frequent host of the mite. The latter, however, as indicated by Webster,<sup>2</sup> was doubtless abroad in the land "as early as 1830 [1829]," or twenty years before it was discovered in England.

*Pediculoides ventricosus* Newport is parasitic on the Angoumois grain moth (*Sitotroga cerealella*); on the wheat joint worm ([*Harmolita*] *Isosoma tritici* Fitch); on the wheat straw-worm (*Harmolita grandis* Riley); on the *Ditropinotus aureoviridis* Crawford (a hymenopterous insect known as a chalcid fly, and itself parasitic on the wheat jointworm, the wheat straw-worm and the like); on the larvae of *Bruchus*, infesting peas in Italy; on *Meromyza americana*, infesting the stems of wheat; on the barley jointworm (*Isosoma hordei*); on *Leptotrachelus dorsalis*, infesting wheat; on the periodic cicada (*Cicada septemdecim*); on the peach twig borer (*Anarsia lineatella*); on the cotton boll weevil (*Anthonomus grandis*) and the pepper weevil (*A. eugenii*); on wood-boring beetles, and on other soft-bodied insects and their larvae.

While this enumeration of the varied hosts of *Pediculoides* is of interest, as accounting for the far-flung incidence of the dermatitis of which it is now known to be the cause, it is with its activities as a parasite of the Angoumois grain moth, especially in the eastern part of the United States, and of the wheat jointworm in the midwestern states east of the Mississippi, that I shall be particularly concerned in the next section of this paper.

AMERICAN DEMONSTRATIONS THAT THE DERMATITIS FOLLOWING CONTACT WITH GRAIN OR STRAW IS CAUSED BY *PEDICULOIDES VENTRICOSUS*

*The Work of Schamberg and Goldberger.*—In the spring of 1909 an outbreak of the same "peculiar and unfamiliar disease of the skin" that was described by Schamberg<sup>9</sup> eight years before occurred among the crew of twenty sailors of a private yacht docked in the Delaware River at Philadelphia. Cases among the crews of other craft, and seventy cases in twenty separate households and boarding houses, brought the total number of victims to 123. The epidemic attracted the attention not only of the local health authorities of Philadelphia but of the federal government. The surgeon general of the United States Public Health and Marine Hospital Service ordered Passed Assistant Surgeon Joseph Goldberger of that service to Philadelphia to make an investigation of the malady, which he did in cooperation with Dr. Schamberg.

In nearly every case studied it was shown that the patient had been in contact with a new mattress made of wheat straw that had been received in small part from Indiana, but for the most part from southern New Jersey. The significance of these observations will become more clearly apparent in detailing the work of Rawles in Indiana and in pointing out the credit due

him. It is sufficient here to state that investigations by the United States Bureau of Entomology revealed the fact that, while nearly all the wheat straw on which Schamberg and Goldberger worked was infested with the Angoumois grain moth, only a small proportion harbored the wheat jointworm. Both of these parasites, however, are hosts of *Pediculoides ventricosus*—the grain moth being the predominant wheat pest in New Jersey; the jointworm, in Indiana.

It is unnecessary to review in detail Schamberg and Goldberger's investigations, the admirable thoroughness and scientific conclusiveness of which are not in question. They demonstrated the invariable presence of a mite in the straw from which the dermatitis was contracted, and they reproduced the dermatitis by exposing the human skin to the mite. The latter, as stated in the preceding section, was identified by Mr. Nathan Banks,<sup>16</sup> a noted expert on Acarina, Bureau of Entomology, not as *Pediculoides ventricosus* Newport but "as very close to, if not identical with, the *Pediculoides ventricosus*."

The investigators made no mention of having recovered *Pediculoides* from a lesion of the dermatitis.

Schamberg and Goldberger<sup>17</sup> began their work June 9, 1909, submitted a preliminary report of their observations June 21 and published that report July 9. A final or subsequent report, in no essential modifying the preliminary account, was published by Goldberger<sup>18</sup> June 10, 1910.

Since the preceding publications, such of the standard dermatologic textbooks as have treated of grain itch at all have either credited Schamberg and Goldberger as the sole discoverers of the cause of the disease or, if mentioning the work of Rawles, have given credit for priority of discovery to Schamberg and Goldberger. Only one treatise, that of Stelwagon and Gaskill,<sup>19</sup> as far as I have observed, has approached a just presentation of the facts. That volume stated: ". . . Goldberger and Schamberg, and, almost simultaneously, Rawles, were the first to associate convincingly cause and effect, and to identify the organism; Schamberg's investigations being extensive and conclusive." (The italics are mine.)

*The Work of Rawles.*—Approximately one month before Schamberg and Goldberger commenced their investigation of the epidemic of dermatitis in Philadelphia and its environs, another epidemic of the same disease began in the general section embracing northern Indiana. Sixty-one cases were studied by Dr. Lyman Talmage Rawles, an ambitious young man who had graduated four years previously from the Fort Wayne Medical College and who had settled in Hometown, a small country village ten miles north of Fort Wayne. That Dr. Rawles was imbued with the scientific spirit is evidenced by the fact that he was equipped with a microscope and accessories, rare implements in the armamentarium of the country doctor of over a quarter-century ago.

It will, I think, the more effectively subserve the interests of clarity, in endeavoring to point out the credit that is due to Rawles<sup>20</sup> as the original and independent American discoverer of the cause of grain itch,

17. Schamberg, J. F., and Goldberger, Joseph: Epidemic of an Urticarioid Dermatitis Due to a Small Mite (*Pediculoides Ventricosus*) in the Straw of Mattresses, Pub. Health Rep. 24, Nos. 27-53 (July-Dec.) 1909.

18. Goldberger, Joseph: The Straw Itch (Dermatitis Schambergi): A Disease New to American Physicians, Pub. Health. Rep. 25: 779 (June 10) 1910.

19. Stelwagon, H. W., and Gaskill, H. K.<sup>2</sup> (footnote p. 1242).

20. Rawles, L. T.: Dermatitis *Ditropinotus Aureoviridis*; Synonym, Straw Itch, Indiana M. J. 2: 337 (Aug. 15) 1909.

if I first present his own account of his etiologic investigations, supplying later such omissions of dates, names and particulars as will give to that account the significance and importance that it deserves. He stated:

In May 1909 a very strikingly strange skin disease presented itself in this and surrounding country in epidemic form . . . limiting itself to the wheat growing sections.

The people generally affected were farmers and those living in small villages or towns where straw is used in beds, under carpets and around stables to bed stock. . . . The following incident led to an investigation as to the probable etiology:

A family had cleaned house, refilling the straw ticks of their beds and placed fresh straw under the carpets, and in about one week the family had developed this peculiar skin disease. In the beds was found a small, black fly, about the size of an ordinary gnat, which at first it appeared to be, but closer observation revealed that it was not of the gnat family. Upon examination of the straw it was found that a large number of the straws were perforated . . . through the bark of the straw, in the region of the joint, generally about two inches from the joint. The perforations were about the size of a small pinhole and ranging in number from ten to thirty in a straw. Upon section of the straw a small black fly was found under many of the openings through the bark.

Several flies were examined to ascertain if they possessed a piercing proboscis, and while observing one which had just been taken from under the bark of the straw, through which there was no perforation over the fly, a small mite was observed crawling over the dead body of the fly.

Placing the bodies of several flies under the microscope and using a ¼-inch objective and a No. 5 eyepiece, it was found that on nearly all flies over which the bark was intact a small parasite could be detected, these mites varying in number from two to four mites to each fly. Upon furthering the observations it was found that the dermatitis lasted after the flies had been observed and exterminated.

The following experiments were tried to prove whether it be the fly or the parasite that was the etiologic factor in producing the dermatitis:

Six live flies were taken, upon which no parasite could be found; these were placed under a watch glass and bound upon the right arm, leaving them in contact with the skin for three hours. Upon the left arm four dead flies, on which living parasites had been observed, were placed under a watch glass and left in contact with the skin for three hours, after which the glasses were removed and results awaited. The right arm showed nothing. Upon the left arm there appeared within twelve hours four small wheals, the character and evolution of which are later described.

To further experiments some fresh lesions of patients were scraped and the scrapings examined microscopically and two of the mites were found in the scrapings.

It is doubtful whether any other account of a medical investigation as succinct and straightforward as the preceding ever more completely failed to achieve what should have been its instant result; namely, to win credit for its author as the original and independent American discoverer of the cause of the disease concerned. Fortunately, however, the several specific names and dates which, inserted in the account, would have ensured its accomplishment of this are still available in Dr. Rawles's professional files.

Before presenting these data, so naively omitted by Rawles, it is necessary to introduce a few entomologic facts in order to make more intelligible the description of certain of Rawles's observations, such as the perforated straws, the mite-bearing "flies," and the like, and to the end that subsequent references to those features may be clearly understood.

There are several parasitic pests of wheat, but it is with only one of these, the wheat jointworm (*Harmolita*) *Isomoa tritici* Fitch, with which we are here concerned. This parasite, an insect, has four stages—egg, larva, pupa, adult. As an adult it is a black fly about

three-sixteenths inch long and looks somewhat as would an ant with wings. The egg is pushed down into the stem of the wheat plant with the ovipositor of the female, in May, passes through the stages of larva and pupa, and, the following May, having become an adult, gnaws a tiny circular hole, from within outward, through the side of the wheat stem, and, in a free environment, flies away in search of growing wheat, in which to initiate another life cycle.

These entomologic facts explain (1) the "perforations" in the straws, and (2) "the small black flies" in the straw-ticks of the beds, described by Rawles.<sup>20</sup> But they do not explain the far more important third factor noted by him—"the small mites crawling over the dead bodies of the flies," later reproducing the dermatitis, and still later recovered from the lesions of patients. This third factor is as readily accounted for as were the first and the second factors. Where straw is kept in a mass, as in a stack, a mow, a bale, or a bed-tick, *Pediculoides ventricosus* literally swarms through the mass, and when, in May, the adult jointworms begin to gnaw openings in the straw, the mites—many, many times smaller than the jointworms—enter through the beginning openings and kill all but about 5 per cent of the jointworms before the latter can enlarge the openings sufficiently to escape. This accounts for the third factor, the mites.

It now remains but to supplement Rawles's<sup>20</sup> original account with the specific names and dates previously mentioned to complete the detailed record of the original and independent American discovery of the cause of grain itch. Those names and dates<sup>21</sup> are embodied in the following paragraph:

In the spring of 1909, there lived at Huntertown a Mrs. Porter. Residing in the same house with her were her son and her son-in-law and his wife, Mr. and Mrs. Bert Darrow. During the week preceding April 26th, Mrs. Porter "cleaned house," refilling the bed-ticks with, and placing under the carpets, fresh wheat straw from a stack in her back lot. In so doing, Mrs. Porter contracted a "cold"; and, on April 26th, Dr. Rawles was summoned to her. On May 11th, Mr. Darrow came to Dr. Rawles's office with a skin eruption that the latter at first thought was urticaria. The patient stated that his wife, who had remained at home, was suffering with the same affection. Dr. Rawles prescribed for both. The next day Mr. Darrow, meeting Dr. Rawles on the street, told him that he (Darrow) and his wife were no better, and that his mother-in-law (Mrs. Porter) and his brother-in-law had the same disease. Two days later Mr. Darrow again came to Dr. Rawles's office, when scrapings, taken from lesions on the patient's back and microscopically examined by Dr. Rawles, showed the presence of mites. The patient remarked that since the new straw was put under the carpets at Mrs. Porter's the house had been "full of small flies," and he wondered whether the straw had anything to do with the flies and the "itch" with which all in the house were suffering. On the same day, Dr. Rawles and Mr. Darrow obtained from the stack in the back lot of Mrs. Porter's home specimens of the straw that had been put under the carpets, etc. With mite-bearing flies obtained from this straw, the etiologic investigations described in Dr. Rawles's<sup>20</sup> original paper were carried out.

Thus, on May 14, 1909, twenty-six days before Schamberg and Goldberger began their joint investiga-

21. Furnished in personal communications from Dr. Rawles.

tion, thirty-eight days before they submitted the preliminary report of their observations, and fifty-six days before they published that report, Rawles recovered mites from lesions of grain itch and reproduced those lesions by exposing the skin to the same mites.

Having confirmed, by repeated experiments on several other patients, during the week following May 14, the discoveries made on that date, Rawles's next step was to obtain an identification of the mite that he had proved to be the cause of the dermatitis. Accordingly, specimens of the straw with which he had been working, and which were known to contain the "flies" and the incriminated mite, were sent to the Department of Entomology, Purdue University, Lafayette, Ind., with explicit information as to the nature of the identification desired and as to the procedure which, in the light of the personal experience of Rawles in examining those particular specimens, was most likely to lead to success at the hands of the examining entomologist.

Here was an opportunity fraught with the highest importance, not only to Rawles but to many thousands of his fellow men. For eighty years the inhabitants of the grain-growing sections of America and Europe had been intermittently scratching; thousands of farm hands, of threshers, of handlers of grain, of the crews of water-craft, had been made miserable; boarding houses had been emptied of their inmates, and whole cargoes of cereals had been dumped into the water that those on board might be freed from a pestiferous dermatitis. The culprit mite at last had been captured, tried and found guilty; its sentence was only being postponed for want of a name. Dr. Rawles impatiently awaited the decision of the entomologic high court at Purdue. In a few days, the decision came and was as follows:<sup>20</sup>

The straws you sent are infested with the wheat-straw worm (*Isosoma tritici*), which gets inside of the main stem. The parasite which is working up on the fly is the ditropinotus aureoviridis. This is a new species of parasite, it having been described last year for the first time.

So the name of the convicted criminal was "ditropinotus aureoviridis"—surely too euphonic, even when misspelled in lower case, for a creature so vile!

As to the report as a whole, it is well to note, not in the spirit of pedantry but in that of science, that the straw was not "infested with the wheat-straw worm [i. e., the wheat straw-worm, *Harmolita grandis* Riley]" but with the wheat jointworm (*Harmolita*) *Isosoma tritici* Fitch, and that "the ditropinotus aureoviridis [Ditropinotus aureoviridis Crawford]"<sup>22</sup> was not "described last year [1908] for the first time" but in 1907.

In reading this report, scientifically inaccurate though it is, I realized that its incrimination of *Ditropinotus aureoviridis* as the cause of grain itch nevertheless pointed to the possibility that that dermatitis is not an etiologic entity but is due now to *Ditropinotus*, now to *Pediculoides*. Deciding to clear this point at first hand, I procured from the Bureau of Entomology living specimens of *Ditropinotus aureoviridis* Crawford, just as they were emerging in the adult, or fly stage, from the "cells" of the wheat jointworm, late in July 1933, and confined eleven of them on the flexor surface of my bare left forearm, under a small inverted Petri dish, for six hours. Not even the slightest irritation resulted. It was evident that *Ditropinotus aureoviridis* Crawford does not cause grain itch.

It did, however, cause several suspicions—among them the suspicion that the examining entomologist at Purdue did not see *Ditropinotus*. Rereading the letter from the chief of the Bureau of Entomology, dated July 18, stating that the specimens of *Ditropinotus* would be furnished, I noted the sentence "At the time this material is sent you, I shall also indicate the approximate date the adults may be expected to emerge from the jointworm cells." They did not emerge until ten days later, or July 28. Investigation revealed that this was evidently the second seasonal generation of the parasite, the first generation beginning to emerge, in this latitude, "about the first week in June." Even so, I wondered why *Ditropinotus* should refuse to emerge for a dermatologist in subtropical Washington before the first week in June but obligingly appear for a general practitioner and an entomologist in chilly northern Indiana at least two weeks earlier, or May 14, the date on which Rawles first saw the alleged *Ditropinotus* "crawling over the dead body of the fly." For, be it noted, if the entomologist at Purdue saw *Ditropinotus* on or about May 25, Rawles must have seen it May 14; for the two were looking at the same object, in the same situation—a parasite on a fly. Investigation of the seasonal habits of *Ditropinotus*, supplemented by correspondence with the Bureau of Entomology, Washington, and with the state agricultural experiment stations of Kentucky, Ohio, Illinois and Indiana, elicited the following facts: The eggs of *Ditropinotus aureoviridis* are deposited in the cells of the jointworm; the resulting larvae, full grown, pass the winter in the cells, beginning to emerge as adults (flies) "about the first week in June," in Virginia; between June 16 and June 27 in Kentucky; from "just prior to harvest" to "before fall" in Ohio, and from July 24 to August 30 in Illinois, and while there are "no [official state] records of the emergence of the *Ditropinotus aureoviridis*" in Indiana. Wildermuth, for the U. S. Bureau of Entomology, did find not only the latter insect but the wheat jointworm, both being parasitized by *Pediculoides ventricosus*, in straw in Rawles's barn, at Hometown, in December.

Thus it became clear, on the recorded testimony of competent entomologists, that even in Virginia, approximately 150 miles farther south than Hometown, Ind., the adult *Ditropinotus* does not emerge before the first week in June; that in Kentucky, in the same latitude as Virginia, it does not emerge until after the middle of June; that in Ohio and Illinois, in the same latitude as Indiana, it does not appear earlier than "just prior to harvest," and that in Indiana itself there is no official record of its emergence in spring, summer or fall. Therefore, it is highly improbable, if not impossible, that the "fly" in question was seen either at Hometown on May 14 or at Purdue about May 25.

Nor are the preceding facts the strongest available evidence that the examining entomologist did not see *Ditropinotus*. Just eight words of his report convict him "out of his own mouth." Those words are: "*The parasite which is working upon the fly.* . . ." (The italics are mine.) The "parasite" does not work "upon the fly." The adult *Ditropinotus* fly does not work upon the adult jointworm fly. The larva of *Ditropinotus* works upon the larva of the jointworm. "The larva," said Phillips and Poos,<sup>23</sup> "feeds almost continuously, if undisturbed, until nothing remains of the host larva but the empty skin." That is, when the *Ditropinotus* larva has finished with the jointworm larva there is

22. Crawford, J. C.: New North American Hymenoptera, J. New York Entomologic Soc. 15: 178, 1907.

23. Phillips, W. J., and Poos, F. W.: Life-History Studies of Three Joint Worm Parasites, J. Agric. Research 21: 412 (June 15) 1921.

nothing left—no adult jointworm fly develops. It is like the small boy eating the apple: "There ain't go'n' ta be no core!" Consequently, as far as *Ditropinotus* is concerned at all, the examining entomologist's report "The parasite which is working upon the fly is the *ditropenatus aureoviridis*" can be interpreted only as follows:

"The straws that you sent are infested with wheat jointworms that have never been attacked by *Ditropinotus aureoviridis*."

If, then, the parasite at work upon the fly was not *Ditropinotus aureoviridis*, what parasite was it? Since the straws sent to Purdue were from the same stack as those that Rawles had been studying; since the presence of both "flies" and mites in the straws was verified by Rawles just before the straws were sent; since the mites that Rawles saw "crawling over the dead bodies of the flies" were the same as those that he recovered from the lesions of Mr. Bert Darrow and other patients with grain itch, and the same as those with which he reproduced the disease, and since the only parasite known to be capable of causing grain itch is *Pediculoides ventricosus*, the parasite seen at Purdue about May 25, 1909, must have been *Pediculoides ventricosus*.

Indeed, this conclusion is confirmed in a personal communication recently received from Prof. J. J. Davis, the present chief in entomology at Purdue, who states that the parasite was "apparently . . . misidentified," and who quotes Webster<sup>24</sup> to the same effect, as follows:

Owing to an unfortunate misunderstanding, for which no one connected with these investigations [by the U. S. Bureau of Entomology] is responsible, Dr. Rawles did not receive a proper determination of the mite. . . . The entomological nomenclature in his paper . . . should therefore be corrected by substituting *Pediculoides ventricosus* for *Ditropinotus aureoviridis* wherever the latter name occurs. . . .

This gratifying announcement was no surprise to Rawles; for when Wildermuth, investigating for the bureau, visited Rawles at Hometown in December 1909 and showed him *Pediculoides ventricosus* in straw from his own barn, Rawles instantly recognized that mite as identical with the one which he had recovered from the lesions of Mr. Bert Darrow and other sufferers from grain itch, and with which he reproduced the disease on the preceding May 14.

And when Webster showed Schamberg<sup>3</sup> the mite found at Hometown by Wildermuth, Schamberg recognized it as identical with the one found by him and Goldberger at Philadelphia and identified by Banks<sup>16</sup> as "very close to, if not identical with, the *Pediculoides ventricosus*."

There is no certainty of the date on which *Pediculoides* was misidentified for Rawles, but careful investigation points to May 25. Equally uncertain is the date on which Rawles submitted the manuscript of the account of his discoveries to the *Journal of the Indiana State Medical Association*, in which it was published on Aug. 15, 1909. In the absence of any record, the editor's statement that the manuscript probably was received in June may be accepted as correct.

Nor does the date on which the manuscript was submitted, or the date on which the mite was misidentified, greatly matter. The significant facts remain that on May 14, 1909, twenty-six days before Schamberg and Goldberger began their joint investigation, Rawles recovered from lesions of grain itch a mite with which

he reproduced that disease and which was subsequently identified by Wildermuth and Webster<sup>2</sup> as *Pediculoides ventricosus*.

Rawles did his work—original and independent—in a small country village, without laboratory facilities, and, as is evident, far removed from those with entomologic knowledge and technical skill adequate to aid him, while Schamberg and Goldberger<sup>17</sup> worked in a great metropolitan medical center, with the well-nigh limitless resources of the United States Public Health and Marine Hospital Service and the United States Bureau of Entomology at their command.

#### RAWLES'S INCIDENTAL CONTRIBUTION TO ENTOMOLOGY

Nearly as notable as his discovery of the cause of grain itch was Rawles's incidental contribution to one of the problems of entomology.

I pointed out in an earlier section that the predominance of the Angoumois grain moth as a wheat pest in the Eastern states and as a host of *Pediculoides ventricosus* accounted for the origin, in the straw studied by Schamberg and Goldberger, of the epidemic of grain itch in the East. However, this threw no light on the origin of the widespread epidemic being investigated by Rawles, for the reason that the grain moth never occurs in great abundance in the Middle West except in grain kept in store in southern sections of Indiana and Illinois. Commenting on the effect of Rawles's discoveries in helping to solve this entomologic problem, Webster stated:<sup>24</sup>

Dr. Rawles' investigations were very carefully made and the results are exceedingly valuable for the reason that, in case of this western epidemic, he was able to trace the cause of the dermatitis to *Pediculoides ventricosus* and follow this back to the host insect, *Isosoma tritici*. This paper of Dr. Rawles . . . not only clears up the obscurity with reference to the cause of this epidemic in the Middle West . . . but, furthermore, these studies seem to solve the problem of the cause of the skin eruption noticed by Dr. Harris to have occurred as far back as 1830 [1829].

Thus Rawles, in proving that *Pediculoides ventricosus*, parasitic on the wheat jointworm, was the cause of the Midwestern epidemic of grain itch, demonstrated incidentally first, to entomologists, that the wheat jointworm was the predominant wheat pest of the corresponding region and secondly, to physicians, that the itching eruption noted eighty years before, in persons who had slept in beds of barley straw infested with the barley jointworm, probably was grain itch, caused by *Pediculoides ventricosus*, twenty years before that villainous mite was discovered.

#### CONCLUSIONS

1. The earliest observation of dermatitis following contact with straw or grain—probably what is now known as grain itch, caused by *Pediculoides ventricosus*—was made in Massachusetts, in 1829.<sup>25</sup>

2. The mite that is now entomologically known as *Pediculoides ventricosus* Newport<sup>10</sup> (1850) was discovered by Mr. George Newport of England in 1849 and was described by him as *Heteropus ventricosus* in 1850.

3. *Pediculoides ventricosus* was first entomologically identified in the United States by Webster<sup>2</sup> in 1882.

4. *Pediculoides ventricosus* apparently was first observed in the United States, in connection with what is now known as grain itch, by Dr. Henry Skinner<sup>26</sup> of Philadelphia, about 1894-1896.

25. Stelwagon, H. W., and Gaskill, H. K.,<sup>5</sup> p. 1243 (footnote).  
26. Skinner, Henry, cited by Webster.<sup>2</sup>

The first clinical description of what is now known as grain itch was published by Dr. Jay Frank Schamberg<sup>9</sup> July 6, 1901, under the title "An Epidemic of a Rare and Unfamiliar Disease of the Skin."

It is still uncertain whether *Pediculoides ventricosus* Newport<sup>10</sup> (1850) is the only grain-infesting insect capable of causing grain itch.

*Pediculoides ventricosus* was first recovered from a case of grain itch, at any rate in the United States, by Dr. Lyman Talmage Rawles, on May 14, 1909.

The first American demonstration that *Pediculoides ventricosus* is the cause of grain itch was made by Dr. Lyman Talmage Rawles on May 14, 1909.

The second American demonstration that *Pediculoides ventricosus* is the cause of grain itch was made by Drs. Jay Frank Schamberg and Joseph Goldberger<sup>17</sup> on June 9 and June 21, 1909.

Dr. Lyman Talmage Rawles was the original independent American discoverer of the cause of grain itch.

Columbia Medical Building.

## ACUTE COMPLETE GRANULOPENIA WITH DEATH DUE TO DINITROPHENOL POISONING

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There have been reports recently of ingestion of dinitrophenol (1-2-4) with subsequent psychic disturbances, vasomotor and circulatory changes, dermic reactions<sup>1</sup> and even an otologic complication.<sup>2</sup> Only three cases of agranulocytic angina following ingestion of dinitrophenol have been reported.<sup>3</sup> In one case,<sup>4</sup> in which the drug was self administered in two weeks in doses of 100 mg. four times daily, the patient recovered following withdrawal of the drug, antigen therapy and the use of pentnucleotide. The second patient, taking 21,800 mg. in the form of "dinitrophen" over a period of four months, developed a picture of complete granulopenia with unfavorable reactions, such as sense of warmth, perspiration, sore throat, vertigo and a pruritic eruption of the skin. These symptoms vanished in about three days following withdrawal of the drug but recurred with the repetition of the drug. This patient responded to pentnucleotide and blood transfusion.<sup>5</sup> In the third case,<sup>6</sup> 90 grains (5.8 Gm.) had been taken in a period of twenty days and subsequently nausea, diaphoresis, anemia and scleral icterus occurred, with ulceration of the pharynx, inflammation of the nasal and pharyngeal mucosa and of the gums and cervical adenopathy. The patient, under administration of leukocytic cream and pentnucleotide, began to show a response at the

end of the third day of treatment and was later discharged improved. Tainter and Wood<sup>7</sup> describe in detail a case reported by Geiger<sup>8</sup> in a short communication: A physician, informed of the effects of the drug, took a dose approximately seventeen times the recommended therapeutic or subfebrile dose of dinitrophenol. Restlessness, apprehension, progressive rise in temperature to 105.7 F., rapid pulse, profuse perspiration, delirium and, finally, coma and death characterized the eleven-hour course of the clinical picture. No blood count was reported nor was postmortem study of the bone marrow described.

In a series of eighteen cases of the ingestion of dinitrophenol reported by Masserman and Goldsmith,<sup>9</sup> who tried to evaluate the psychobiologic changes in schizophrenic patients by use of the drug, none of the blood pictures showed any change in cytology. This series includes one death from the administration of the drug but with no hematologic or bone marrow changes. In a series of 113 cases treated for obesity, no anginal symptoms followed the use of the drug. Blood studies were not reported.<sup>10</sup>

Because of the increasing number of deaths reported in the recent literature following the use of a drug the toxicity of which is still a matter of conjecture and because of the protean manifestations of this toxicity, we herewith submit the following report:

### REPORT OF CASE

**History.**—A Jewish girl, aged 13 years, was referred by Dr. J. M. Leavitt on July 1, 1934, at 7:30 p. m., with the following history: The patient had been taking dinitrophenol in 1½ grain (0.1 Gm.) capsules, one daily since May 15, at which time she weighed 265 pounds (120 Kg.). She had received 100 capsules from her family physician on May 15, with instructions to take one capsule daily. In a period of forty days the patient had lost 25 pounds (11 Kg.). By June 30, forty-six days later, only forty-six remaining capsules were found. At this time the patient began to complain of weakness, malaise, feverishness and sore throat and she began to vomit. On examination the patient, who had been in syncope, appeared asthenic and was delirious and occasionally euphoric. The head and face were warm. Respiration was irregular. The knee jerks were absent. Positive Murphy signs were present bilaterally. Submucous hemorrhages were seen on the soft palate, as were small areas of necrosis on the tip of the uvula and slight edema of the peritonsillar fossa. The tongue was dry, there was marked fetor oris and the cervical glands were enlarged and tender. Local treatment for the throat was applied, with no relief of symptoms.

The patient, admitted July 2 at 3:50 a. m., complained of vomiting, fever and sore throat of thirty-six hours' duration. The family history was essentially irrelevant. She had had measles, chickenpox, German measles and whooping cough in childhood. There had been no other previous illnesses or hospital admissions. The systems were normal except for the pronounced obesity since childhood. The menses had not yet begun. There was no history of allergic reactions. The present illness began on the morning of June 30, when the patient began to vomit apparently after a dietary indiscretion, the vomitus at first being partly digested food and later containing bile; the temperature was 101 F., which began to rise progressively to 105.6 F. The patient complained of pain in the throat and abdomen and of intense heat and thirst. At no time did the patient take aminopyrine or related drugs.

**Examination.**—On admission, the patient appeared acutely ill and was irrational. The face was flushed, circumoral pallor present and the skin hot and dry. The submaxillary glands

read before the Bronx Hospital Clinical Society, Oct. 8, 1934.

Dintenfass, Henry: An Ear Complication from Dinitrophenol Poisoning, J. A. M. A. 102: 838 (March 17) 1934.

Jackson, Harry, and Duvall, A. I.: Dinitrophenol Poisoning: Report of a Case, J. A. M. A. 102: 1844 (June 2) 1934.

Subsequent to the preparation of this paper there appeared in THE JOURNAL, Oct. 6, 1934, a report by Dr. Solomon Silver of a fatal case of granulocytosis following dinitrophenol therapy with pneumonia complicating the terminal picture.

Hoffman, A. M.; Butt, E. M., and Hickey, N. G.: Neutropenia Following Amidopyrine, J. A. M. A. 102: 1213 (April 14) 1934.

Bohn, S. S.: Agranulocytic Angina Following Ingestion of Dinitrophenol, J. A. M. A. 103: 249 (July 28) 1934.

Davies, Elizabeth N., and Shapiro, Matthew: Neutropenia Following Dinitrophenol, with Improvement After Pentnucleotide and Leukocyte Cream, J. A. M. A. 103: 480 (Aug. 18) 1934.

7. Tainter, M. L., and Wood, D. A.: A Case of Fatal Dinitrophenol Poisoning, J. A. M. A. 102: 1147 (April 7) 1934.

8. Geiger, J. C.: A Death from Alpha-Dinitrophenol Poisoning, J. A. M. A. 101: 1333 (Oct. 21) 1933.

9. Masserman, J. H., and Goldsmith, Harry: Dinitrophenol, J. A. M. A. 102: 523 (Feb. 17) 1934.

10. Tainter, M. L.; Stockton, A. B., and Cutting, W. C.: Use of Dinitrophenol in Obesity and Related Conditions, J. A. M. A. 101: 1472 (Nov. 4) 1934.

were palpable and tender, and the throat was deeply injected, with purulent exudate present on the tonsils and uvula. The pupils were contracted, were equal and regular, and gave a normal reaction to light (there was no accommodation, since the patient was irrational and uncooperative). The thyroid was not palpable. The heart was normal except for a tachycardia. The lungs were normal. The blood pressure was 100 systolic and 68 diastolic. The abdomen was normal except for a moderate number of silvery striae in the lateral aspects of the lower part of the abdomen. There was slight pretibial edema, knee jerks and tendon reflexes were diminished but equal, and no abnormal reflexes were present. The temperature was 105.6 F., the pulse was 136 and synchronous with the heart beat, and respirations were 32.

Laboratory examinations<sup>11</sup> revealed the following: Blood count: hemoglobin, 88 per cent; red blood cells, 4,600,000; white blood cells, 700; lymphocytes, 100 per cent; platelets, 180,000. Blood chemistry: dextrose, 148.2; urea 16.2; non-protein nitrogen, 35.3; uric acid, 3.2; creatinine, 1.23; cholesterol, 115.6; carbon dioxide combining power, 41.2 volumes per cent.

Examination of the urine showed the following: Specimen 1, July 1, was a dark amber and slightly cloudy. The Derrien test was positive for dinitrophenol.

Specimen 2, July 2, was a dark amber and slightly cloudy and had an acid reaction and a specific gravity of 1.019; albumin was 2 plus. It was negative for sugar, acetone, diacetic acid and urobilinogen; bile was present. There were very few fine and coarse granular casts, an occasional red blood cell and an occasional white blood cell. The Derrien test was negative for dinitrophenol.

Specimen 3, July 3, was orange, cloudy, acid, with a specific gravity of 1.017; albumin was 3 plus. It was negative for sugar, acetone and diacetic acid; bile was present. There were a few fine and coarsely granular casts, an occasional red blood cell and an occasional white blood cell. The Derrien test was negative for dinitrophenol.

Direct smear of the throat showed gram-positive cocci. Culture yielded *Streptococcus viridans* of the alpha type.

The diagnosis was dinitrophenol poisoning and secondary agranulocytic angina.

**Course of Illness.**—Before admission, the patient had been given a high colonic irrigation, salicylates and sodium bicarbonate, 20 grains (1.3 Gm.) of each, instilled in a rectal drip and followed by hydrotherapy. The vomiting ceased and the tongue appeared less dry. On admission the patient was given a saline hypodermoclysis, 5 per cent dextrose intravenously, and a rectal drip totaling 3 liters of fluids. One-fourth grain (0.016 Gm.) of morphine was administered, repeated and supplemented with 2 cc. of 50 per cent magnesium sulfate. Two cubic centimeters of liver extract was given intramuscularly and repeated intravenously. The delirium, restlessness and perspiration persisted. A blood transfusion of 400 cc. of whole blood was given ten hours after admission, which improved the patient's condition somewhat. Twelve hours after admission the patient began to show signs of laryngeal edema; the temperature was 105.4 F.; the pulse was 120, of feeble tension, poor quality and irregular; respirations were 24 and stertorous in type; the lips and nails were cyanotic, the uvula and pharynx were markedly edematous, necrotic and cyanotic in color; the heart sounds were of fair quality, rapid and occasionally irregular. The patient was placed in an oxygen tent. An ice cold rectal drip was instituted and an ice pack was applied. The patient was still incoherent and restless, exhibiting a marked tremor of the body and incontinence of stools. Sedatives in the form of bromides and a mixture of opium and alkaloids were ineffective and frequent alcohol sponges were given; the temperature was still elevated to 105.4 F. The pulse was 130, intermittent and of poor quality. The patient was cyanotic and gasping for breath in spite of oxygen administered nasally. Twenty hours after admission the patient was taken to the operating room in a moribund condition; she was cyanotic and unconscious; breathing was barely audible with marked stridor, and the accessory muscles of respiration were in use. To combat the laryngeal stenosis, direct laryngoscopy

and bronchoscopy were attempted, but with failure, and tracheotomy was performed by Dr. Kleinfeld. At this point the patient's condition became much worse, and the bronchoscope was passed through the tracheotomy incision. The patient ceased breathing and failed to respond to artificial respiration, coramin and intracardiac epinephrine.

**Autopsy.**—The relevant postmortem observations were as follows:

External examination showed no ecchymosis or petechiae and moderate postmortem rigor, with no lividity present.

Subcutaneous fat was very pronounced. All abdominal organs appeared to be in normal position. The peritoneum was smooth and glistening.

The liver measured 27 by 16 cm. On section, the parenchyma showed advanced fatty changes.

The gallbladder was distended with about 20 cc. of greenish bile. No calculi were seen. The common, cystic and hepatic ducts were patent.

The pancreas measured 12 by 6 cm. No gross pathologic changes were noted.

The spleen measured 14 by 8 cm. The capsule was wrinkled. On section the pulp was friable and congested.

The stomach showed no gross pathologic changes.

In the small intestine there were numerous focal hemorrhagic necroses and some superficial ulceration in Peyer's patches and hyperplastic solitary acuminate lymph nodes.

No gross pathologic condition was noted in the large intestine.

Each kidney measured 19 by 9 cm. The capsules stripped easily. On section, no gross pathologic condition was noted.

Each adrenal measured 4 by 1 cm. and showed no gross pathologic changes.

No gross pathologic condition was present in the bladder.

The ureters were patent.

The uterus was small and infantile.

The ovaries showed numerous follicle cysts at the periphery.

The heart showed no free fluid in the pericardial cavity. The heart measured 9 by 7 cm. The musculature of the left ventricle measured 13 mm. in thickness. No gross pathologic condition was seen in the myocardium, endocardium or pericardium.

Each lung measured 20 by 10 cm. and showed no gross abnormal changes.

No adenopathy was present.

The thyroid measured 4 by 4 cm. No gross pathologic condition was noted.

There was no evidence of fracture of the skull. The meninges did not show abnormal changes. No pathologic changes were noted with regard to the cranial nerves. The ventricles showed no evidence of hemorrhage. The cut surfaces of the cortex, medulla, cerebellum, pons and proximal portion of the spinal cord showed no evidences of inflammation or of pathologic changes.

**Microscopic Examination.**—In the liver there were extensive fatty changes in the center of the liver lobule about the central vein.

The spleen showed extensive vascular congestion; there were hyaline thrombi present in the sinusoids.

The kidney presented evidence of acute hemorrhagic nephritis. Many lymphoblastic plasma cells were noted in the congested vessels, and tubular hemorrhages were present.

The lungs showed no noteworthy pathologic changes except for vascular congestion.

A colloid goiter was present in the thyroid with early focal calcific deposits.

The ovaries showed congestion of the ovarian vessels.

The pituitary showed vascular congestion.

There was no depression evident of the bone marrow activity in a study of the vertebral bone marrow.

There were several superficial ulcerations of the mucosa of the intestine.

Culture of the heart's blood proved negative.

A postmortem blood specimen gave a positive Derrien reaction for dinitrophenol.

#### COMMENT

Agranulocytic angina of Friedemann, agranulocytosis of Schultz, malignant neutropenia of Schilling, pernicious leukopenia of Fitz-Hugh and Krumbhaar and granulopenia are interchangeable terms, all designating

11. We are indebted to Dr. Joseph Felsen, director of laboratories and research, for the hematologic, chemical, bacteriologic and postmortem studies reported in this paper.

not only an absence of neutrophils but also a marked decrease in all the granulocytes. Our patient's blood smear showed only 700 white blood corpuscles, the cells being entirely lymphocytes. Of all the possible etiologic factors such as bacterial infection,<sup>12</sup> an allergic basis,<sup>13</sup> congenital weakness of the bone marrow,<sup>14</sup> an endocrine disturbance,<sup>15</sup> special bone marrow selectivity, aminopyrine and the benzene ring compounds, of which dinitrophenol is a member, the specific history of ingestion of the drug pointed definitely toward dinitrophenol. The drug was recovered from the urine and from the postmortem specimen of the heart's blood as exhibited by positive Derrien tests. Furthermore, the symptomatology and the clinical course of the case followed regularly, step by step, definite mechanistic characteristics of a granulopenic process.<sup>16</sup> Pathologic study of the bone marrow showed no depression of bone marrow activity. The significance of this is of debatable interpretation in view of nine necropsies in cases of granulopenia reported by Fitz-Hugh and Comroe.<sup>17</sup> Our patient took the drug in subfebrile doses for a period of forty days. She could have readily taken  $6\frac{1}{2}$  grains (420 mg.) daily with presumably no untoward effects,<sup>18</sup> since her weight was 265 pounds (120 Kg.). But her daily dosage was  $1\frac{1}{2}$  grains (97.5 mg.). Apparently the only possibility of explanation here is in the effect of cumulative toxicity of prolonged administration. Since there is no known antidote, treatment was aimed at supportive measures for the maintenance of the life and the strength of the patient and at bone marrow stimulation. Because of the rapid, fulminating course of the case, supportive measures were relied on mostly.

#### SUMMARY

1. There have been only four cases reported to date of acute granulopenia following ingestion of dinitrophenol. In three of these cases recovery occurred; the fourth ended fatally.
2. In our case death occurred eighty-four hours after the onset of symptoms of poisoning following the ingestion of dinitrophenol in subfebrile doses over a period of forty days. Agranulocytic anginal symptoms presented themselves thirty-six hours after onset.
3. Autopsy failed to reveal any changes in the granulopoietic system.
4. The patient weighed approximately 120 Kg. Her daily dosage, according to the work of Cutting and his associates,<sup>18</sup> could have been  $6\frac{1}{2}$  grains with no untoward effects over a prolonged period of time. However, this girl took only  $1\frac{1}{2}$  grains daily over a period of forty days, during which time she lost 25 pounds. On the forty-sixth day the patient showed a marked febrile reaction.
5. The dosage in this case was low over a prolonged period and certainly within the presumed limits of safety. Hence this fatality can be attributed either to cumulative toxicity or to an idiosyncrasy to the drug.
6. At present there is no criterion by which to evaluate the sensitivity of a patient to the drug.

12. Dennis, E. W.: *J. Exper. Med.* **57**: 993 (June) 1933.  
13. Pepper, O. H. P.: *The History of Agranulocytic Angina*, J. A. M. A. **97**: 100 (Oct. 10) 1931.  
14. Strumia, M. M.: *Am. J. M. Sc.* **187**: 826 (June) 1934. Wolff, E.: *Folia haemat.* **44**: 38 (April) 1931, quoted by Strumia. Burkens, J. C. J.: *Nederl. tijdschr. v. geneesk* **75**: 2722 (May 23) 1931, quoted by Strumia.  
15. Hubble, Douglas: *Lancet* **2**: 113 (July 15) 1933.  
16. Roberts, S. R., and Kracke, R. R.: *Ann. Int. Med.* **8**: 129, 1934.  
17. Fitz-Hugh, Thomas, Jr., and Comroe, B. I.: *Am. J. M. Sc.* **185**: 552 (April) 1933.  
18. Cutting, W. C.; Mehrtens, H. G., and Tainter, M. L.: *Actions and Uses of Dinitrophenol*, J. A. M. A. **101**: 193 (July 15) 1933.

7. We have at our disposal, besides close supervision of the administration of the drug, the clinical measures of a check up of the daily temperatures and pulse rates, of blood counts, metabolic rates and weight loss.

8. There is no known specific antidote for dinitrophenol poisoning. The only remedy that seems to hold any promise, and which has been used efficaciously, is pentnucleotide. Unfortunately, because of the acute fulminating nature of the illness, it was not considered advisable to use pentnucleotide in our case. Other measures, such as oxygen, ice packs, alcohol sponges, iced proctoclyses, intravenous dextrose infusions and morphine, are essentially supportive in character.

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## EFFECTIVE METHOD OF TREATING AMEBIC ABSCESS OF THE LIVER

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ST. LOUIS

This paper is prompted by the fact that, in spite of definite and very marked lessening of the mortality rate in cases of amebic abscess of the liver treated by aspiration, the idea is little known in most parts of the country except those where amebiasis is common, the literature revealing that many of these patients are still subjected to surgery.

Rogers<sup>1</sup> in 1910 suggested the treatment of amebic abscesses by aspiration and reported several cases treated thus with good results. In 1920 Duckworth<sup>2</sup> mentioned treatment by aspiration and irrigation but did not report any cases. Ludlow<sup>3</sup> reported ten cases of amebic abscess treated by aspiration and emetine injections with no fatalities. Thurston<sup>4</sup> reported sixty-four cases treated with emetine and aspiration with a mortality rate of less than 25 per cent.

There are many advantages to treatment by this method over surgery. In the first place, by the time the diagnosis has been made the patients have suffered for some time with a chronic wasting disease and are poor surgical risks generally. In reported series of cases the surgical mortality has ranged well over 50 per cent. In the second place we are not dealing here with a true abscess; that is, there is no frank suppuration. The material obtained from the abscess consists only of necrotic liver tissue mixed with blood. In other words, if one can entirely evacuate the cavity and eradicate the cause there is little more we can hope to accomplish. Thirdly, these patients are usually ambulatory within a few days.

Contributing to the high surgical mortality is the fact that most of these cases with open drainage become secondarily infected, resulting in prolonged hospitalization, convalescence, and in many instances death.

#### DIAGNOSIS

A liver abscess should be suspected in every obscure case in which there is pain in the right upper quadrant of the abdomen with an enlarged and tender liver. Many of the abscesses rupture under the diaphragm, producing an elevation of the diaphragm with dulness,

From the St. Louis City Hospital.

1. Rogers, L.: *Treatment of Amebic Abscess of the Liver*, *Indian M. Gaz.* **45**: 493, 1910.  
2. Duckworth, Sir Dyce: *The Diagnosis and Treatment of Tropical Hepatic Abscess*, *J. Trop. Med.* **23**: 149 (June) 1920.  
3. Ludlow, A. L.: *Treatment of Abscess of Liver by Aspiration and Subcutaneous Injections of Emetine*, *China M. J.* **35**: 93 (Feb.) 1924.  
4. Thurston, E. O.: *Liver Abscess*, *Lancet* **2**: 1008 (Nov. 15) 1924.

absent breath sounds and voice sounds in the right lower part of the chest. X-ray examination reveals the elevated diaphragm. There is usually a history of fever, malaise, and perhaps chills for several weeks or months. A history of diarrhea or dysentery is helpful, but absence of such a history by no means rules out an abscess. Patients with such symptoms and signs in absence of other explanation deserve a cautious exploratory aspiration.

The majority of amebic abscesses are in the right lobe of the liver, and in nearly every instance they are large solitary lesions. The site of election for aspiration is in the tenth intercostal space either posteriorly or in the midaxillary line. The area is infiltrated with procaine hydrochloride and a 3 inch needle is inserted directly in until the typical reddish brown "pus" is obtained. As a rule the abscesses are large (from 300 to 400 cc. or larger) and very little difficulty is encountered in locating them. Frequently, by the time the patient presents himself to the doctor, the abscess has "pointed," and definite point tenderness may be elicited somewhere around the lower part of the thorax. In such a case the aspiration should be done in this region. In order to substantiate the diagnosis, after withdrawal of several hundred cubic centimeters of pus it is wise to instil 20 cc. of opaque oil and from 200 to 300 cc. of air into the abscess. It can then be outlined very nicely when the patient is roentgenographed in various positions.

#### METHOD OF TREATMENT

Once the diagnosis has been established, the patient is bridged across two beds in such a position that the part of the abscess nearest the surface will be in the most dependent position. In other words, if the abscess has "pointed" in the tenth intercostal space in the midaxillary line, the patient is placed on his right side with this region over the space between the beds. A large gage needle is then inserted into the tenth intercostal space and just through the wall of the abscess. The point of this needle is then in the most dependent portion of the abscess and in position to evacuate the contents of the lesion entirely. This needle is connected to a Wangenstein suction apparatus. A second large needle is then inserted into the abscess at any other point and connected to an ordinary gravity flask containing 1:2,500 emetine solution. The circuit is opened and the entire contents of the abscess are flushed out. In such a manner one evacuation is deemed sufficient. Several hundred cubic centimeters of the emetine solution is left within the cavity.

Simultaneously, the patient is started on emetine hydrochloride according to the method suggested by Reed,<sup>5</sup> 1 grain (0.065 Gm.) of emetine hypodermically for six days followed by one-half grain (0.03 Gm.) for eight days, making a total course of 10 grains (0.65 Gm.). As brought out by Reed, emetine in larger doses may be quite toxic and this course of ten grains has proved to be sufficient. The response to such treatment is rapid. Within a few days the patient feels normal, is free from fever and is allowed up. The liver shrinks markedly and approaches normal size. The patient is allowed to go home and told to return every month for a check up and x-ray examination of the liver. Though the patient is symptom free, it requires several months for the abscess to disappear. Instead of giving the emetine hypodermically, Soper<sup>6</sup> has obtained

excellent results by the use of emetine hydrochloride intravenously, giving 1 grain a day for seven days.

When the hepatic amebiasis has subsided, the patient should be given a thorough course of carbarsone to eliminate any remaining intestinal amebiasis. Arsenicals such as carbarsone and acetarsone are naturally contraindicated in hepatic amebiasis.

#### REPORT OF CASES

CASE 1.—E. J., a white man, aged 35, entered the hospital Nov. 25, 1935, complaining of gradual loss of weight and strength, malaise and fever, growing progressively worse for three months. He also complained of pain in the right shoulder for three weeks. He had several night sweats. On close questioning he stated that for five or six months he had had from four to five soft brown stools a day, without blood. His physician told him it was normal for some people to have this many stools. The history was essentially negative otherwise.

The patient was emaciated, with dulness, absent breath sounds and voice sounds in the right lower part of the chest. The blood pressure was 108 systolic, 60 diastolic. The liver was down four fingerbreadths below the costal margin and was moderately tender. The heart was regular without murmurs. The apex beat was in the fifth intercostal space in the nipple line. The temperature was 103, pulse 114, respiration 26. The urine was normal. Blood culture gave negative results. The Kahn reaction was negative. The blood sugar was 112 mg. per hundred cubic centimeters of blood; nonprotein nitrogen, 23 mg. Red blood cells numbered 4,904,000, white blood cells 20,400, with basophils, eosinophils and myelocytes 0 per cent, juveniles 4 per cent, stabkernige 33 per cent, segmented forms 44 per cent, lymphocytes 19 per cent, monocytes 0 per cent and hemoglobin 85 per cent.

Proctoscopic examination revealed from ten to fifteen shallow ulcers the size of match heads in the lower sigmoid. Some of the material from these ulcers was placed on a slide with warm saline solution and proved to be swarming with motile amebas containing red blood cells. X-ray examination of the chest revealed a density in the right base which was suggestive of an elevated diaphragm. A needle was inserted into the tenth intercostal space posteriorly and 750 cc. of dark brown "pus" aspirated. Twenty cc. of opaque oil was then instilled into the abscess and x-ray examination revealed this to be in the middle of the liver. The patient was treated by the method described. He became free from fever within a few days and has made an uneventful recovery, gaining 20 pounds (9 Kg.) within two months. The diminution in size of the abscess was followed by x-ray examination.

CASE 2.—J. H., a white man, aged 35, entered the hospital Jan. 21, 1936, complaining of a sharp pain in the right upper quadrant of two weeks' duration. He also stated that he had had an intermittent diarrhea of one month's duration, for which he had taken some medicine obtained from the drug store. The stools were watery with tenesmus, but there was no blood. On admission there was no diarrhea.

The patient was well nourished and appeared acutely ill. No definite abnormalities were apparent in the lung fields. The heart was regular, with no murmurs, and was not enlarged. The liver was four fingerbreadths below the costal margin and quite tender. In the tenth and eleventh intercostal spaces in the midaxillary line there was moderate fullness and definite point tenderness in the tenth intercostal space in the midaxillary line. The temperature was 100, pulse 88, respiration 32. The Kahn reaction was negative. Nonprotein nitrogen was 25 mg. per hundred cubic centimeters of blood, blood sugar 72 mg., amylase 12. Red blood cells numbered 3,000,000, white blood cells 16,900, basophils, eosinophils, myelocytes and juveniles, 0 per cent, stabkernige 18 per cent, lymphocytes 18 per cent, segmented forms 64 per cent, monocytes, 0 per cent, hemoglobin 75 per cent.

Proctoscopic examination revealed a normal mucosa in the sigmoid and rectum with no evidence of ulceration or bleeding.

In view of the observations, a needle was inserted into the tenth intercostal space at the region of point tenderness and the typical chocolate colored material of an amebic abscess obtained. Eight hundred cc. of the "pus" was aspirated and 500 cc. of air instilled along with 20 cc. of opaque oil to facil-

5. Reed, A. C.: Treatment of Amebiasis, J. A. M. A. 103:1224 (Oct. 20) 1934.  
6. Soper, H. W.: Treatment of Amebic Dysentery, Am. J. Digest. Dis. & Nutrition., March, 1924.

itate x-ray studies. The stools were consistently negative for blood or amebas.

Two days later drainage and irrigation were performed in the manner described. Two days following this the temperature, pulse and respiration were normal and have remained so. The patient was out of bed in five days and made a rapid recovery, gaining 35 pounds (16 Kg.) in eight weeks.

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## THE SUCCESSFUL TREATMENT OF ESSENTIAL THROMBOPENIA WITH HEMORRHAGE BY ROENTGEN RAYS

HILLYER RUDISILL JR., M.D.

CHARLESTON, S. C.

Stephan,<sup>1</sup> only four years after Frank's<sup>2</sup> description and separation of thrombopenic purpura as a distinct entity, resorted to roentgen treatments over the spleen and reported cures of two "fulminating" cases with this method. From this time there have been numerous reports of single cases or small series by irradiation. While some of the reported results have been favorable,<sup>3</sup> there have been some reports, as of Pancoast and his co-workers,<sup>4</sup> that have failed to confirm Stephan's enthusiastic and completely satisfactory pioneer efforts. Because of this, irradiation of the spleen is not universally accepted as being worth while and in the last few years seems to have fallen into disuse. This is strikingly shown in the series of Jones and Tocantins.<sup>5</sup> In their series of fifty-three patients only one was treated with x-rays. Fowler<sup>6</sup> in a recent review of 160 cases casually mentions x-rays as follows: "The use of roentgen rays over the spleen has been found to be of only temporary value."

tically a specific therapeutic agent in primary or uncomplicated thrombopenia with hemorrhage.

The present generally accepted worth of roentgen treatment cannot be better summarized than in the following quotations. These excerpts are from three of the best and most widely used textbooks on general medicine and treatment:

Irradiation of the spleen with roentgen rays has been advised in purpura haemorrhagica. It may be beneficial when appropriately given but rather often will be found ineffective.<sup>7</sup>

Irradiation of the spleen with small doses of x-rays occasionally benefits a patient somewhat.<sup>8</sup>

In the third textbook,<sup>9</sup> roentgen treatment is completely ignored.

### RESULTS IN THE PRESENT SERIES

My associates and I have successfully treated seven cases of purpuric and nonpurpuric thrombopenia with hemorrhage by irradiation of the spleen with x-rays. The eighth case, which was complicated with acute myeloid leukemia, terminated unfavorably.

### COMMENT ON CASES

Patient 2 had a 500 cc. transfusion of whole blood with no effect before x-rays were resorted to.

Patient 3 had 20 cc. of antivenin with no effect, prior to irradiation, but five days later after the thrombopenia had disappeared and the bleeding had ceased the patient developed an anaphylactoid purpura (Henoch-Schönlein type) from the antivenin. This was easily controlled with epinephrine and ephedrine.

Case 5 has been reported in detail by de Saussure and Townsend.<sup>10</sup>

Patient 6 has had great improvement in general health following the use of thyro-ovarian medication.

Case 7 has not been included in the table. The patient was a white boy, aged 8 years, who continued to bleed from an incision for the removal of infected inguinal glands. A diag-

Summary of Eight Cases in Which Roentgen Treatment Resulted in Complete Arrest of Thrombopenia

Case	Race	Sex	Age	Diagnosis	Manifestations	Platelet Count		Follow Up	No. of X-Ray Treatments
						Admission	Dismissal		
1. E. Q.	White	♀	29	Purpuric thrombopenia	Bleeding from gastro-intestinal and genito-urinary tracts; purpuræ	11/3/32 20,000	11/18/32 210,000	5/1/36 No return	6
2. J. M.	Negro	♂	30	Purpuric thrombopenia	Bleeding from gums and genito-urinary tract; petechiae	10/31/33 36,000	12/13/33 260,000	12/1/34 No return	1
3. M. K.	White	♀	23	Purpuric thrombopenia	Bleeding from all orifices and skin lesions	2/24/34 70,000	3/10/34 250,000	5/1/36 No return	2
4. M. H.	White	♀	7	Purpuric thrombopenia	Bleeding operative incision and ecchymoses	4/30/34 81,000	5/6/34 192,000	5/1/36 No return	3
5. M. D.	Negro	♀	35	Nonpurpuric thrombopenia	Bleeding from genito-urinary tract	5/11/34 33,000	6/16/34 237,000	1/17/36 No return	2
6. G. R.	White	♀	15	Nonpurpuric thrombopenia	Abnormal uterine bleeding; bleeding gums	7/13/34 80,000	8/3/34 187,000	5/1/36 No return	6
8. S. M.	White	♂	24	Nonpurpuric thrombopenia	Bleeding from gums and genito-urinary tract	3/3/36 20,000	4/15/36 290,000	6/7/36 No return	6

I have found that roentgen treatment to the spleen is so satisfactory that it is impossible for me to understand why it has not come to be considered as prac-

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The material for this brief is taken from a thesis submitted for membership to the American Roentgen Ray Society and has been released for publication in this manner rather than in its official journal, the American Journal of Roentgenology and Radium Therapy.

1. Stephan, R.: The Reticulo-Endothelial Cellular System of the Spleen in Relationship to Blood Coagulation, München. med. Wchnschr. 67: 309 (March 12) 1920.

2. Frank, E.: Die essentielle Thrombopenie, Berl. klin. Wchnschr. 52: 490-494, 1915.

3. Schreiner, B. F.: Radium and X-Ray Treatment of Myopathic and Thrombopenic Menorrhagia, Radiology 17: 796-799 (Aug.) 1931.

4. Pancoast, H. K.; Pendergrass, E. P., and Fitz-Hugh, Thomas: The Present Status of the Roentgen-Ray Treatment of Purpura Haemorrhagica by Irradiation of the Spleen, Am. J. Roentgenol. 13: 558-567 (June) 1925.

5. Jones, H. W., and Tocantins, L. M.: The Treatment of Purpura Haemorrhagica, J. A. M. A. 100: 83 (Jan. 14) 1933.

6. Fowler, W. M.: Thrombopenic Purpura, Ann. Int. Med. 9: 1475-1487 (May) 1936.

nosis of thrombopenia with hemorrhage with a platelet count of 25,000 was made. An additional diagnosis of acute myeloid leukemia was made forty-eight hours later. Following three roentgen treatments to the spleen the platelet count went up to 85,000 but the leukemia could not be controlled and the child died Dec. 13, 1934, six weeks after admission.

I believe, in spite of the smallness of the series, that uncomplicated thrombopenia with hemorrhage should be divided into two distinctly different classes; cases of unknown etiology (probably endocrine in origin), as cases 1, 6 and 8, and others from various toxemias,

7. A Text-Book of Medicine, ed. 3, Philadelphia, W. B. Saunders Company, edited by Russell L. Cecil, the Section on the "Blood Forming Organs," edited by Minot and Buckman, p. 1048.

8. Beckman, Harry: Treatment in General Practice, ed. 2, Philadelphia, W. B. Saunders Company, 1934, p. 504.

9. Osler's Principles and Practice of Medicine, edited by Thomas McCrue, ed. 11, New York, D. Appleton & Co.

10. de Saussure, H. W., and Townsend, Eleanor W.: Purpura Haemorrhagica in Pregnancy, Am. J. Obst. & Gynec. 29: 597-599 (April) 1935.

cases 2, 3, 4 and 5.<sup>11</sup> For convenience I have termed these respectively as cases with an excessive S factor (overdestruction of platelets by the spleen) and the others of C factor type (toxic destruction of platelets in the circulation). This division is important from the standpoint of radiation treatment. In the C factor type the spleen's normal function needs only to be lowered until the toxemia is overcome, and from one to three roentgen treatments will usually accomplish this. In the S factor type, unless the patient responds partially to other forms of therapy also it may be occasionally necessary to render the spleen permanently functionless by intensive irradiation.

#### TECHNIC OF THE TREATMENTS

The same technical factors were purposely used throughout this series. The generator is a one-half wave, valve rectified, 220 kilovolt peak capacity installation. The tube has been a thick glass, large bulb, open bowl, high voltage therapy apparatus of the Coolidge type. The following were used in all of the treatments: voltage, 200 kilovolt peak; tube current, 4 milliamperes; filter, 0.5 mm. of copper plus 1 mm. of aluminum; roentgens per treatment, 200 measured in air; roentgens per minute, 10; area exposed, anteriorly over the spleen; size of field, 20 cm. circular.

#### CONCLUSION

Roentgen radiation constitutes an exceedingly valuable and possibly a specific therapeutic agent when applied over the spleen in primary or uncomplicated thrombopenia with hemorrhage either with or without purpuric skin manifestations.

### *Clinical Notes, Suggestions and New Instruments*

#### THROMBOCYTOPENIC PURPURA INDUCED BY PERTUSSIS TOXIN IN ALLERGIC CHILDREN

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Immunization against whooping cough is not without its dangers. They depend more on the constitution of the child than on the toxicity of the vaccine. Three allergic children developed thrombocytopenic purpura following the subcutaneous injections of B. pertussis vaccine obtained from different sources. The onset of the purpura came as a surprise without any premonitory signs by which the condition could be foretold. In one case purpura appeared within ten days, in the second during the second week and in the third case during the third week after the final injections. The purpura can be attributed to the activation of a preexisting but latent hemorrhagic state in one child. But in the two other children it is necessary to look for the pathologic lesion engendered by the pertussis toxin. And from the rarity of thrombocytopenic purpura as a complication in immunization it is apparently dependent on the allergic constitution.

The genesis of the purpuric state involves capillary toxicosis, megakaryocyte injury or both. There is ample clinical and experimental evidence that pertussis toxin is capable of inflicting such damage. B. pertussis forms no exotoxin, but an endotoxin is obtained from cultures which produces, experimentally, hemorrhagic lesions in animals. The contention that hemorrhagic manifestations observed in whooping cough are mechanical in origin is not substantiated by careful study. In an epidemic of whooping cough in an infantorium I observed

hemorrhages in the conjunctiva, gums and lips, petechiae in the skin and blood in the urine and stool. The infants had ample antiscorbutic protection and no latent hemorrhagic disease prevailed. In fact, more hemorrhagic symptoms were observed when the coughing was least severe. In all specific fevers some form of purpura may be the complication. But following immunization against pertussis only localized subcutaneous hemorrhages appeared at the site of injection in many children and purpura was induced in the following three cases:

CASE 1.—S. S., an allergic girl aged 4 years, referred by Dr. Tully of New Castle, Ind., developed purpura within ten days of immunization against whooping cough in September 1935. Large ecchymoses suddenly appeared throughout the body assuming the characteristics of hemorrhagic hives. Oozing from the gums and petechiae of the mucous membranes occurred following ingestion of solid food. There was no epistaxis or blood in the urine or stool. The condition persisted for six weeks, with a slight elevation of temperature. No drugs were offered the child during the immunization, nor was the purpura preceded by any infection. Spontaneous recurrences of milder nature appeared in November and again in December 1935.

Physical examination during the last episode showed fine petechiae throughout, sparsely distributed. The mucous membranes were unaffected. The eyes were puffy, the nasal breathing obstructed, and there was a postnasal drip, cervical lymphadenitis, retro-auricular intertrigo and a positive tourniquet test. The spleen was not palpable, the liver not enlarged. The child was found sensitive to the toxin of pertussis and to that of the organisms obtained from the maxillary sinuses. The blood showed 81 per cent hemoglobin, 4,600,000 red blood cells, 11,200 white blood cells, 47 per cent polymorphonuclears, 29 per cent lymphocytes, 12 per cent staff cells, of which 8 per cent were eosinophils, and 129,000 platelets, a rise from 88,000. The clotting time was five minutes, the bleeding time five minutes. The blood group was II. Transfusion was performed, the patient was maintained on a nonallergic diet, and the sinuses were treated. The child has remained free from purpura to date.

CASE 2.—T. M., an allergic child aged 2 years, referred by Dr. Lathrop of Plainfield, N. J., developed an exacerbation of purpura within the third week of immunization against whooping cough in July 1935. Confluent purpuric spots appeared over the lower extremities, with no other hemorrhagic manifestations. The blood showed a mild secondary anemia, platelets 85,000, bleeding time seventeen minutes, clotting time five minutes, clot retraction delayed. The tourniquet test was positive. There was no evidence of infectious invasion. The spleen was palpable at the costal border. The condition promptly abated with a transfusion, intramuscular blood and a clotting dietary.

The child had recovered from the first attack of purpura ten months previous to the immunization against whooping cough. At 5 months of age the gums over the erupting first incisors appeared hemorrhagic. Transient purpuric eruptions developed over increasing areas of the lower extremities. The physical examinations gave negative results. The blood picture was characteristic, with 34,000 platelets; the bleeding time was thirty minutes, clot retraction was markedly delayed, and the tourniquet test was positive. With a nonallergic clotting regimen and a transfusion the child recovered, the platelets having risen to 600,000.

CASE 3.—A. C., an allergic girl aged 5 years, referred by Dr. Sarkany of Long Island, developed purpura during the second week of the final immunizing dose of whooping cough vaccine in April 1936. Large ecchymoses appeared over the face and left arm and later similar patches, firm, raised and plum colored, covered the eyes, wrists and backs of the hands. There was occasional but slight epistaxis and hematuria and some elevation of temperature but no disturbance in the child's demeanor. The bleeding time, clotting time, blood count and platelet content were essentially normal. The condition gradually abated, when within a fortnight a paroxysmal cough developed which aggravated the purpura.

Physical examination showed waxy pallor and subconjunctival and cutaneous hemorrhages. A symmetrical dark purpuric

11. The toxic factors were, in order, case 2, acute specific urethritis and rheumatic fever; case 3 followed German measles; case 4 was associated with pyogenic cervical adenitis, and in case 5 there was a toxemia of pregnancy.

area covered the cheeks and nose. There were small petechiae over the trunk and limbs but none involving the mucous membranes. The ecchymoses were adjacent to bony prominences and pressure points with slight trauma apparently localizing the bleeding. The temperature was high, the pulse was rapid, the respirations were shallow. The pharynx was injected and the cervical lymph glands were enlarged. There were coarse mucous râles throughout the chest. The spleen was not palpable and the liver not enlarged. The reflexes were normal. Early one morning the child became restless, screamed and was found semiconscious. The head was retracted, breathing was stertorous, the movements of the extremities were involuntary. There was also involuntary micturition and defecation. There were all the evidences of a complete right-sided hemiplegia, an upper motor neuron lesion spreading to the left side and finally involving the whole body. With embarrassment of the vital centers she died five hours after the onset of the cerebral hemorrhage that morning.

1060 Park Avenue.

#### THE USE OF CARBON TETRACHLORIDE IN THE REMOVAL OF ADHESIVE TAPE

REPORT OF A NEAR FATAL CASE

FREMONT A. CHANDLER, M.D., CHICAGO

In view of the aroused interest in adhesive solvents since the recent tragic accident in a midwestern university training camp in which two lives were lost, there is danger of exchanging fire hazards for less familiar, asphyxiative ones. Benzine or similar products are inflammable and must be protected from open flames or sparks. These products are more efficient in the removal of adhesive tape and of desquamated epithelium. They are well tolerated by young patients. The potential danger of fire is probably only slightly greater than that present in the use of alcohol solutions which are on every dressing tray or cart.

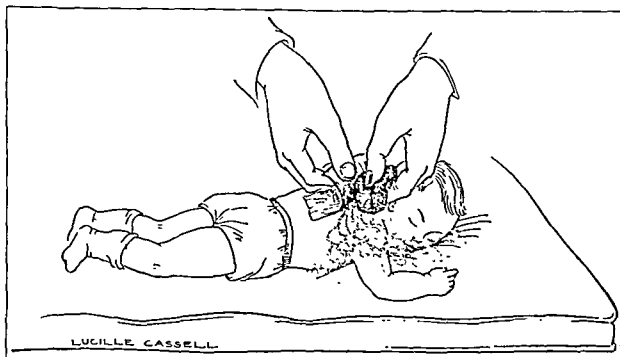
On the other hand, carbon tetrachloride softens desquamating skin only slightly. Its odor is offensive to children who have had recent anesthetics.

Carbon tetrachloride and similar chemicals have definite and dangerous anesthetic properties. A recent issue of *Time* describes the use of carbon tetrachloride as a means of killing foxes so as not to injure their pelts. The vapor is heavy, a feature enhancing its use as a fire extinguisher. Its use by some otolaryngologists in irrigating the external auditory meatus is to be condemned because of the possibility of leakage into the pharynx by way of the eustachian tube.<sup>1</sup>

The following case is reported to show that the free circulation of air in a large, open ward is not sufficient to eliminate the anesthetic properties of carbon tetrachloride under certain conditions:

C. P., a white girl, aged 4 years, had tuberculous spondylitis of the third and fourth and the seventh and eighth dorsal

vertebrae of eighteen months' duration. A spine fusion operation to immobilize the diseased area of the spine was performed without any shocking effect on the patient. Convalescence was highly satisfactory. Solid food was tolerated within twelve hours. The operative dressings, which were held in place by adhesive tape, were changed on the fourth day by the intern. While he was removing the dressings, the child was prone. Carbon tetrachloride, which had been substituted for benzine by the hospital authorities because of the potential fire hazard, was used as a solvent to facilitate the removal of the dressings (see illustration). The patient collapsed suddenly, respirations ceased and the radial pulse became impalpable. Death appeared imminent. Artificial respiration was instituted. In about five



Method of removing adhesive tape from the back, showing spread of heavy asphyxiating vapor of carbon tetrachloride.

minutes the pulse returned, as did active respiration, at first feebly, and then stronger. In about ten minutes the child was quite normal. The subsequent convalescence has been uneventful.

This case is reported as a warning against the indiscriminate use of carbon tetrachloride in the removal of dressings from the upper part of the body, head and neck.

The presentation of carbon tetrachloride solutions and allied substances as safe solvents for the removal of adhesive tape under certain circumstances must be questioned. The layman is probably more familiar with the dangers of inflammatory mixtures than with those of heavy vapors possessing toxic potentialities.

6 North Michigan Avenue.

#### AMEBIASIS AND PSEUDOPOLYPOSIS OF THE COLON

HAMILTON H. ANDERSON, M.D.; DANIEL DELPRAT, M.D.;  
ALANSON WEEKS, M.D., AND ALFRED C. REED, M.D.  
SAN FRANCISCO

Although polyposis of the colon is not uncommon and malignant transformation is known to occur,<sup>1</sup> the etiology of polyps is still a matter of conjecture. In fact, we seem no closer to the solution of this problem than Wagner<sup>2</sup> was in 1832 when he "described the formation during the healing process of pedunculated polypoid, little warts on the margins of the ulcers and on certain smooth patches on their surface." He evidently did not suspect, however, that the warts were really folds of the diseased mucous membrane itself.<sup>3</sup> Irregular, polypoid masses of mucosa are often found at the margins of ulcers in the process of healing or are formed by the undermining of part of the mucosa in cases of chronic dysentery and chronic ulcerative colitis. Woodward<sup>3</sup> terms this pathologic entity "pseudopolyposis of the colon," thus distinguishing it from the colonic tumors of idiopathic origin referred to by Virchow. Since Woodward's description in 1881, many efforts to classify polyps of the colon have ended in confusing rather than clarifying the picture of this disease. Today it is recognized, however, that two general types of polyposis occur; namely, the condition first described by Wagner<sup>2</sup> and the diffuse adenoma-

1. Lawrence, J. C.: Gastro-Intestinal Polyps: Statistical Study of Malignancy Incidence, *Am. J. Surg.* 31: 499 (March) 1936.

2. Wagner, J., quoted by Woodward.<sup>3</sup>

3. Woodward, J. J.: *Am. J. M. Sc.* 81: 142, 1881.

1. The following references relative to the toxicity of carbon tetrachloride have been published within the last two years:

Desoille, H., and Antoine, G.: Intoxication par un mélange de tétrachlorure de carbone et d'essence de pétrole destiné au nettoyage des cheveux (Intoxication from Mixture of Carbon Tetrachloride and Benzine Used for Shampoo), *Ann. de méd. lég.* 16: 155-157 (March) 1936.

Gonzales, T. A.: Fatal Inhalation of Dry Cleaning Fluid, *J. A. M. A.* 106: 286 (Jan. 25) 1936.

Lehnher, E. R.: Acute Carbon Tetrachloride Poisoning: Report of a Case, *Arch. Int. Med.* 56: 98-104 (July) 1935.

Tomb, J. W., and Helmy, M. M.: Toxicity of Carbon Tetrachloride and Its Allied Halogen Compounds, *J. Trop. Med.* 36: 265 (Sept. 15) 1933.

Carbon Tetrachloride in Industry, editorial, *J. A. M. A.* 107: 590 (Aug. 22) 1936.

Smyth, H. F.; Smyth, H. F., Jr., and Carpenter, C. P.: The Chronic Toxicity of Carbon Tetrachloride: Animal Exposures and Field Studies, *J. Indust. Hyg.* 18: 277 (May) 1936; *abstr. J. A. M. A.* 107: 461 (Aug. 8) 1936.

Dervillat, P.: L'intoxication expérimentale par le tétrachlorure de carbone; données générales et recherches personnelles (Experimental Carbon Tetrachloride Intoxication: General Considerations and Personal Research), *J. de méd. de Bordeaux* 113: 91-102 (Feb. 10) 1936.

Davis, P. A.: Carbon Tetrachloride as an Industrial Hazard, *J. A. M. A.* 103: 962-966 (Sept. 29) 1934.

Löwy, J.: Die chronische Vergiftung mit Tetrachlorkohlenstoff (Chronic Poisoning with Carbon Tetrachloride), *Arch. f. Gewerbepath. u. Gewerbehyg.* 6: 157-159, 1935.

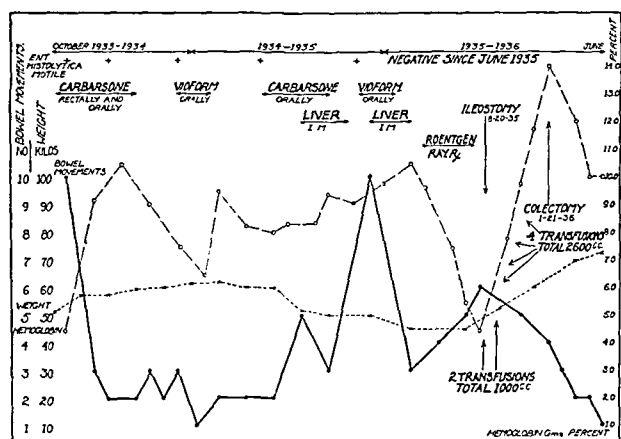
tosis of Cripps.<sup>4</sup> Wesson and Barger<sup>5</sup> indicate that inflammatory mucosal tags or pseudopolyps follow such diseases as chronic ulcerative colitis, tuberculosis or severe amebiasis. Ten per cent of 1,600 cases of chronic ulcerative colitis reviewed by them presented inflammatory polyps as a sequel and 25 per cent of these might develop carcinoma, according to their statistics.

The following case is presented as one of pseudopolypsis of the colon occurring in a person with chronic, severe amebiasis and chronic ulcerative colitis:

## REPORT OF CASE

J. O'N., an Irish nursemaid, aged 30, was seen first on Oct. 24, 1933, when she complained of "tropical dysentery." On arriving from Ireland eight years before she had severe dysentery, with bloody, mucoid liquid movements and complained of fever for a five months period. A physician demonstrated amebas in her stools one year after onset and she was given nine injections of emetine, which afforded her temporary symptomatic relief. During the next five years she had four recurrences of dysentery with fever, at which times she was treated expectantly with temporary improvement of her status.

In 1931 she was given nine treatments of emetine hypodermically and 100 pills of chiniofon, which caused nausea and vomiting but gave relief from the dysentery for a time. One



Clinical course during thirty months.

year later she had nine more injections of emetine, which were followed by dyspnea, palpitation and increased heart rate after exercise, and weakness. The intestinal symptoms cleared until two months before we saw her, since when she has had from fifteen to sixteen liquid, bloody, mucoid movements daily with cramps, but no nausea, vomiting or fever. Four months before, her hemoglobin was 28 per cent. The family history was unimportant. Ten years before, the right lobe of her thyroid was removed. Her habits were regular. Her average weight was 125 pounds (57 Kg.) but at the examination she weighed 115 pounds (52 Kg.), the loss occurring during the past four months.

On examination she was afebrile and pale, with a slightly subicteric tint to the mucous membranes and skin. The left lobe of the thyroid was fuller than the right. The area of cardiac dullness was increased to the left and the heart sounds were of fair quality, with a systolic murmur at the apical and aortic areas. The pulse was regular, with a rate of 90. The blood pressure was 112 mm. of mercury systolic, 60 diastolic. The abdomen was distended with palpable masses in both lower quadrants and was tender in the sigmoid area. The liver edge was felt at the costal margin.

Laboratory tests revealed 1,940,000 red cells, hemoglobin 28 per cent (Sahli), 4.4 Gm. per hundred cubic centimeters, and 8,760 white cells, with 67 per cent neutrophils, 20 per cent lymphocytes, 8 per cent eosinophils, 3 per cent monocytes and

2 per cent megalocytic neutrophils. The urine was normal. *Endamoeba histolytica* (motile) was demonstrated in the stool in smears stained with iron hematoxylin. Culture of the stool was negative for bacilli of the typhoid-dysentery group. Blood agglutinations were negative. The basal metabolic rate was minus 12 per cent. An electrocardiographic tracing<sup>6</sup> showed a rate of 93, slight SA tachycardia, a PR interval of 0.24 second, latent partial auriculoventricular block, and an abnormal lead 4, suggesting cardiac abnormality.

Our diagnosis at this time was:

1. Amebiasis, with colitis, dysentery and secondary anemia.
2. Myocardial damage, due to excessive emetine therapy.

Her progress during the thirty-three months that she has been under our care is outlined in the accompanying chart. The patient harbored *Endamoeba histolytica* for the first eight months of this period, but thereafter no amebas were seen on repeated examination of the stools. Thirty grams of carbarsone was given orally and 10 Gm. instilled rectally, and 30 Gm. of vioform was administered. In addition, soluble iron salts were prescribed throughout and a smooth diet high in protein. Solution liver extract-Lilly was given on two occasions intramuscularly, 100 cc. in divided amounts each time. Roentgen examination was delayed until June 24, 1935, because of the patient's financial status. When severe dysentery recurred, however, and the patient lost 20 pounds (9 Kg.) in three months without exhibiting amebas in her stools, other causes of her symptoms were searched for. Sigmoidoscopic examinations from the beginning showed an ulceration of the lower bowel which was characteristic for chronic amebiasis but which failed to clear under specific therapy. Roentgen examination of the bowel by means of a barium sulfate enema<sup>7</sup> revealed marked spasticity of the entire colon with multiple polypi, most marked in the descending and transverse colon. Since the patient was a very poor operative risk and refused surgical care, we resorted to roentgen treatment as a palliative measure. She had a total of 1,100 roentgens from June 25 to July 29, 1935, but became so weakened by the increasing dysentery and decreasing hemoglobin (it fell to the original level of 4.4 Gm. per hundred cubic centimeters) that she finally consented to an exploratory laparotomy. Two transfusions of 500 cc. were given before operation, which increased the hemoglobin from 7.8 Gm. per hundred cubic centimeters and red cells 2,140,000, to hemoglobin 9.0 Gm. and red cells 3,700,000. The white count was 5,200 cells, with 73 per cent neutrophils and 5 per cent eosinophils.

Operation was performed Aug. 20, 1935, from 10:45 to 11:22 a. m., by Dr. Weeks. Nitrous oxide and ether anesthesia was used. A low left paramedian incision was made through the skin and a very small amount of subcutaneous tissue. The abdomen was opened without difficulty. The colon was immediately visualized and palpated. At about 5 cm. distal to the ileocecal valve the intestine was contracted and hard. The serosa was granular and wrinkled and had lost entirely its customary sheen. On palpation the colon appeared hard, rubbery and firm, calling to mind the feel of a much used garden hose. This condition obtained throughout the entire colon to the rectum, only the head of the cecum appearing normal. On account of the extensive involvement of the entire colon, ileosigmoidostomy was not possible as had been planned, and accordingly a loop of ileum was brought out through a stab wound in the right flank and sutured to the abdominal wall. The abdomen was closed in the usual manner. The patient absorbed 1,500 cc. of saline solution subcutaneously during the operation.

After this preliminary operation the patient was allowed to convalesce for about five months, during which time she was at rest in bed. She received frequent 500 cc. transfusions during this time. Dilute solutions of potassium permanganate or acriflavine hydrochloride were employed in washing out the lower part of the bowel. The patient showed marked clinical improvement but failed to gain weight. Since we had roentgen evidence of polyposis of the bowel and since we believed that malignant change might occur<sup>8</sup> in the polypoid masses, we

4. Cripps, W. N.: Tr. Path. Soc. London 33:165, 1882.

5. Wesson, H. R., and Barger, J. A.: Proc. Staff Meet., Mayo Clin. 9:789 (Dec. 26) 1934.

6. By Dr. John J. Sampson.

7. By Drs. I. S. Ingber, F. H. Rodenbaugh and R. F. Kile.

8. Reed, A. C., and Anderson, H. H.: Am. J. M. Sc. 101:237 (Feb.) 1936.

strongly advised complete colectomy. She finally agreed to undergo this rather formidable operation, which proved to be a life-saving procedure.

The operation was performed Jan. 21, 1936, from 8:43 to 10:25 a. m., by Dr. Delprat. A long left rectus incision was made through the previous operative scar. The abdomen was opened without difficulty. There were no adhesions to the abdominal wall from the operation in August. The entire colon was palpated and found to have remained exactly as noted at the previous operation. The colon however appeared movable and not bound down, so that colectomy appeared feasible. Accordingly the cecum was drawn toward the wound and the distal loop of the previous ileostomy was divided and closed. The lateral attachments of the ascending and descending colon were divided, allowing excellent mobility. The omentum was separated from the anterior surface of the transverse colon, following which the entire colon was removed down to the sigmoid, the mesentery being ligated. This procedure was accomplished without difficulty, but in separating the lower rectum from the sacrum a large perforation was produced through the abnormal intestine and considerable soiling of the peritoneum followed. The intestine therefore was merely loosened as far down as possible and then cut across with scissors. The peritoneum was closed over it as in the method of Coffey, with intraperitoneal and extraperitoneal drainage. The patient was then placed on her side and the remainder of the rectum and anus removed from below, the cavity being packed with gauze soaked with potassium permanganate solution. Following the operation, while the patient was still on the table, she was given 500 cc. of whole blood.

Pathologic examination of the entire colon by Dr. W. P. Stowe showed reddened, hemorrhagic areas, with discrete ulcerations and multiple areas of polypoid excrescences of granulation tissue, none of which exceeded a centimeter in height or width. Microscopic sections showed lymphoid hyperplasia in the mucosal and submucosal coats, increased numbers of eosinophils, plasma cells, and round cells with some polynuclear cells between and beneath the glands. In some sections, islands of round cells and eosinophils were seen extending into the muscularis zone. The glands showed no evidence of malignant change, but superficial ulceration and necrosis were seen frequently in the crests and in the cryptlike folds of mucosa. Polypoid outgrowths of the adenomatous type were not seen.

Several ulcerated areas of the colon were sectioned and the tissue was stained with iron hematoxylin and searched carefully for amebas, but none were demonstrated.<sup>9</sup>

For fourteen days following the operation the patient's temperature did not exceed 37.5 C. (99.5 F.). Her pulse varied, however, from 120 to 140 for sixteen days, thereafter gradually returning to normal. This might be expected because of the soiling at operation. The entire abdominal wound became infected and broke open to the peritoneum. Secondary suture was not possible because of the adjacent discharge ileostomy, so that approximation of the wound edges with adhesive plaster seemed advisable, although unsatisfactory on account of the patient's abdomen being scaphoid at all times. Under treatment with gentian violet solution, however, the wound gradually filled in and was entirely healed on her discharge from the hospital on April 4, 1936.

Since leaving the hospital the patient has gained rapidly in strength, weight and hemoglobin level. When last seen (July 22, six months after colectomy) she was symptom free, her abdominal wound was entirely healed, she averaged two evacuations daily, her weight was 54 Kg. and her hemoglobin was 13.6 Gm. per hundred cubic centimeters, with 4,270,000 red cells and 8,240 white cells, with a normal differential count.

#### SUMMARY

Pseudopolypos of the colon occurred in a patient successfully treated for amebiasis but unsuccessfully treated for coexisting chronic ulcerative colitis. Colectomy proved a life-saving measure in spite of the patient's extreme debilitation, emetine poisoning and anemia due to eight years of chronic, severe dysentery.

350 Post Street—St. Luke's Hospital.

9. Courtesy of Dr. Herbert Johnstone.

## Special Article

### THE PHARMACOPEIA AND THE PHYSICIAN

#### THE USE OF ANTISYPHILITIC REMEDIES

H. N. COLE, M.D.

CLEVELAND

*This is one of a series of articles written by eminent clinicians for the purpose of extending information concerning the official medicines. The twenty-four articles in this series have been planned and developed through the cooperation of the U. S. Pharmacopoeial Committee of Revision and THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.—ED.*

In syphilis there is an active, motile organism which requires moisture and tissue for its further spread and vitality. It is well known that *Spirochaeta pallida* dies within one-half hour if exposed on a dry surface; e. g., a glass slide. On the other hand, if anywhere on the body the organism gains entrance into the skin, through a bruise, a cut or a crack, an infection will probably occur. Of this there is not absolute surety, for it is possible that certain individuals may have some resistance to the disease, perhaps enough at least to ward off an isolated contact. If the organism does penetrate the skin and multiply, the spread is probably quite rapid. One can remember the time when it was considered good therapy to excise the chancre. Now it is felt that there is extension to the draining lymph nodes within a few hours, and probably some of the spirochetes are to be found in the heart blood within a matter of a day or a few days at the most. The multiplying organisms at the site of penetration of the skin finally set up an immune reaction on the part of the host consisting of an infiltrate of serum of mononuclear elements and of fibroblasts; this is spoken of as the chancre or the primary lesion.

The multiplying organisms spreading through the draining lymph chains set up a characteristic, sharply defined, indurated, painless, enlarged type of node with satellite, smaller nodes around it. The syphilitic nodes do not fuse together. They are quite movable and, unless secondarily infected, do not break down. Through the lymph channels and blood stream there is an early further spread of the infection to other parts of the body, notable to the ectodermal elements, resulting in an eventual further immune reaction on the part of the host anywhere from eight to twelve weeks after the infection, known as the secondary stage or eruption. It appears first on mucous membranes and shortly thereafter on the skin. It is also found on the walls of the bladder, on the viscous surfaces and on the meninges. The eruption may be profuse or sparse. There is still difference of opinion as to the amount of relationship between the amount of eruption and the intensity of the disease. There is also recognized the so-called symptomless infection in which the primary lesion and the secondary changes may have been absent or so evanescent that the first intimation the patient may have of an old syphilis may be a positive blood Wassermann reaction, a tabes dorsalis, an aneurysm or a mysterious devastating ulceration of the skin. Sooner

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or later, the secondary manifestations of the disease gradually disappear as the result of treatment or as the result of an increasing amount of immune bodies being built on the part of the host. With occasional later flare-ups the disease gradually drifts into a further stage of latency, in which physical examination may reveal no symptoms of the syphilis and it can be diagnosed only by the history and by a serologic examination. This period of dangerous silence may last for years. It is the period of time in which organisms deposited in the lymph nodes and in the tissues cause chronic fibrotic changes with endarteritis, which may eventually result in a frank aortitis, in a meningo-arteritis, in a hepatitis, or in a gumma of the skin or bone. For some of these changes there may be an exciting cause—trauma. For aortitis, race may play a part; e. g., the Negro. For some there may be no explanation. It is certain that the central nervous system process, e. g., tabes or dementia paralytica, or the insidious aortitis, are laid down early in the course of the disease by deposition of the organism in the vasa vasorum. The central nervous system syphilis is not a change developing "out of the blue" ten or fifteen years after the infection. The syphilitic person who has had little or no treatment may well have developed a basilar meningitis secondary to an infection of the vasa vasorum or thereby the beginnings of a later tabes or dementia paralytica may have been laid down. Moreover, the aortic insufficiency or the aneurysm is an early rather than a late concomitant of an untreated or poorly treated syphilitic disease, allowing specific changes to take place in the vasa vasorum which eventually cause weakening of the vessel walls, scar formation and retraction of the aortic leaflets.

#### PUBLIC HEALTH RESPONSIBILITY IN SYPHILIS

Given a case of syphilis in its early stages, there is a heavy public health responsibility on the part of the physician. All contacts in the home should be repeatedly checked, especially in case the patient is married. Moreover, even in this day and age it may be necessary to examine conditions in the patient's place of business. I was recently consulted by a man with a chancre of the lip and was amazed to find that a common drinking cup was being used in his manufacturing plant, where several hundred men were at work. In all cases of early syphilis, all contacts should be carefully checked by the physician. It may mean the prevention of numerous transfers of the disease to innocent persons. With a preventable disease such as syphilis the medical profession does not exercise sufficient care in diagnosing the disease, in picking it out in its daily work and in properly handling its various manifestations. How many physicians bother about routine Wassermann tests on their patients? And yet many puzzling complaints or signs will be revealed by this single act. It is true that around 30 per cent of all syphilis is latent in character—to be recovered only by careful questioning and positive serologic reactions. And yet it is this 30 per cent of patients who may, in part, be the spreaders of new infections through relapses or act as transfer agents of the disease to the next generation through pregnancy. Moreover, a certain number of them may even then be developing an aortitis or a dementia paralytica. From 25 to 30 per cent of the inmates in asylums are suffering from syphilis, poorly treated or never treated. The Cooperative Clinical Group,<sup>1</sup> in

a recent study of cardiovascular syphilis, found that 69 per cent of the patients had never had any treatment for syphilis. This should indicate to physicians the necessity of more careful examinations of the patients, including routine Wassermann tests. When syphilis is discovered, its thorough treatment is paramount. The medical man is surely in the Court of Public Opinion with regard to this situation, and if it is not properly met the state will next step in and assume full responsibility for handling this disease.

#### RESULTS DERIVED FROM ANTISYPHILITIC DRUGS

In considering a drug worthy of trial in the treatment of syphilis, several criteria are to be considered:

1. The drug should be cheap enough to be available to all.
2. It should be in as simple a form as is possible, not requiring a too elaborate technic for its administration. Because of this criticism our most potent antisiphilitic remedy, arsphenamine, is rarely employed outside syphilis clinics and hospitals. Neoarsphenamine is more easily administered.
3. The remedy should be free from attendant unpleasant symptoms, such as pain, nausea, emesis and headache. Moreover, severe systemic after-effects should not follow its use.
4. Its action should be relatively rapid in alleviating acute symptoms of syphilis; thus, a remedy requiring more than a few days to destroy the spirochetes on moist papules on the lips is not sufficiently potent.
5. The *summa bonum* in the antisiphilitic drug is the preparation that at one dose will destroy all the organisms of the disease in the body without attendant harm to the host. This was Ehrlich's idea when he announced his six hundred and sixth trial compound. Unfortunately, it failed to satisfy the requirement. So we are now forced to rely on the drugs that will come closest to this desired result without too severe reaction to the host. Experience has shown that the three heavy metals in their proper salts—arsenic, bismuth and mercury—best answer these fulfillments. The efficiency of the respective metallic salts has been worked out through studying the rapidity of the disappearance of *Spirochaeta pallida* from inoculation chancres of rabbit testes.

Investigations have also been made on the rapidity of disappearance of trypanosomes from infected mice and rats. With the arsenicals this trypanocidal activity corresponds quite well with the treponemicidal rate, but unfortunately with bismuth compounds this is not the case.

As a definite ratio of the effect of a drug against the spirochetes, one employs what is known as the therapeutic ratio—the maximal tolerated dose over the minimal effective dose. From microscopic study of the rapidity of disappearance of spirochetes after heavy metal therapy from inoculation chancres in rabbit testes, and through transplants to further rabbit testes of the infected testicular material it has been possible to work out the therapeutic ratio. Thus, arsphenamine has a ratio of from 20:1 to 30:1.

It is true that the mistake must not be made of too closely comparing rabbit syphilis to human syphilis. It is well known that rabbit syphilis may actually be eradicated from the host; with the human variety this is certainly not such an easy proposition. The chemotherapeutic ratio for potent bismuth preparations runs around 50:1 or more when the drug is used intramuscularly. Bismuth is ten times as toxic if used intra-

1. Cole, H. N., Uilson, Lida J., and others: *Deliberations Eleventh International Dermatological Congress, Budapest, Patria, 1935*, p. 430.

venously and should never be employed by that route. With mercury the chemotherapeutic ratio is only 1:1 or 1:2. Thus it is easily understood why the trend of syphilis therapy has been more and more to arsenical and bismuth salts.

#### ACTION OF THE HEAVY METALS IN SYPHILIS

It is hardly the scope of this short article to consider the mode of action of the heavy metals against syphilis. This has been taken up at length in various publications both here and abroad. It is known that a mercury salt rubbed into a chancre swarming with spirochetes causes them to disappear. Yet the dosage of mercury *in vitro* sufficiently large to destroy the organisms, if used in life, would kill the host as well. It is probable with all three of these metals that the action is, in part, a specific one but also has some effect on the body cells that enables them, in turn, to overwhelm the spirochetes. Probably the arsphenamines when injected are transformed in the body into a more potent form, arsenoxide, before they exercise their effect, and Levaditi thinks that the bismuth salts are activated by extracts of the tissues into a much more active compound, which he terms "bismoxyl."

#### PREFERRED MODE OF ATTACK IN TREATING SYPHILIS

The elder Fournier was considered to be one of the greatest syphilologists of his time, and no doubt he did much to spread knowledge of syphilis. Moreover, he was one of the earliest adherents to the theory that tabes dorsalis was due to syphilis. This was long before any specific organism had been discovered.

However, the intermittent treatment for syphilis that he so strenuously practiced and advocated undoubtedly impeded the advance of syphilis therapy for many years. In fact, even today, as a result of his teaching, some very able men still employ an intermittent mode of attack in handling this disease. Fournier went on the theory that the physician using mercury was employing a potent remedy, toxic to the liver, bones and gastro-intestinal tract, but especially so to the kidneys. Therefore the patient undergoing treatment should take mercurials for a time, alternating these courses with purposeful rest periods. Such a form of treatment was kept up for from three to four years, the length of the rest periods being gradually increased and the courses of treatment being decreased. It is true that Fournier did not have the additional more potent heavy metals bismuth and arsenic to aid him in his work.

It is to the credit of Almkvist in Europe and almost simultaneously to the credit of Keidel and Moore in this country that attention was called to the disadvantages of the intermittent treatment of syphilis. If it were possible to give syphilitic patients large enough doses of arsphenamine and other heavy metals to cure them in one course of treatment there probably would be no schema necessary in treating syphilis. However, it must be realized that in syphilis one is dealing with a chronic infection due to an organism that, with our present remedies, disappears only gradually from the lymph nodes, skin and deeper structures. In fact, some men, like the late Dr. Warthin, claimed that they never entirely disappear; rather, that the disease is merely "arrested." At any rate, it is quite evident that in a situation comparable to this it would theoretically be unwise to treat the patient by an intermittent form of therapy. Grant that the organisms were checked by

the arsenicals, the bismuth or even the mercury, would it not then stand to reason, if purposeful rest periods were instituted in the course of treatment, that during these periods, with the effect of the remedies removed, any viable organisms would once more start multiplying? Not only does this theoretically sound tangible, but in actual practice the writings of Moore and of the Cooperative Clinical Group would indicate its actual probability. And a recent report by Stokes of the League of Nations investigations comparing the results of the Cooperative Clinical Group, using the continuous system of treatment of syphilis as against the intermittent form of treatment employed by some of the large European clinics, revealed a very favorable comparison for continuous treatment.

Instead of giving the patient purposeful rest periods after a course of arsphenamine or preparations of bismuth or mercury, the treatment is alternated. Perhaps the patient with an early syphilis receives a course of arsenical injections, which is followed at once by a course of intramuscular injections of a bismuth compound. This in turn is followed by another course of arsenical treatment. In this manner, by alternating the drugs, one keeps the disease under continuous attacks with some form or other of antisymphilitic therapy.

Moreover, there is another very important argument in favor of continuous treatment; viz, the problem of relapse in syphilis. In the Cooperative Clinical Group Studies,<sup>2</sup> it was found that relapses as a rule came early in the course of syphilis. In the group material 25 per cent came in the first six months after infection, and by the end of the second year 85 per cent of the relapses to occur had intervened. The average time of relapse was eighteen months after infection and it occurred as a rule nine months after the last treatment. In other words, a physician treating an early case of syphilis should follow the patient carefully during the first two years of the disease, as this is the critical period for relapse to appear. This has been the bugaboo not only of the family physician but also of the syphilologist in treating syphilis. The patient with an early syphilis has been put on antisymphilitic therapy, has done nicely for a time, and all at once, on returning from his purposeful vacation period, is found to have a relapse of his Wassermann test to positive; or, again, he has returned with severe headaches, a lumbar puncture is done and he is found to be suffering from syphilitic meningitis. Perhaps he returns with a type of lesion even more dangerous to the public and to his family—the infectious relapse, in the form of a moist papule on his lip or with condylomata lata of the genitalia or rectum. The Cooperative Clinical Group found that relapses of all kinds, including Wassermann fastness, were much lower if continuous therapy had been employed, 13 per cent as against 21 per cent with intermittent therapy. Moreover, if irregular, haphazard treatment was used, the percentage of relapses mounted to 45. Finally, if the intensive form of therapy was employed, consisting of three or four daily maximal doses of arsphenamine followed by a series of heavy metal injections and purposeful rest periods, the percentage of relapses again was high, 41.

That intermittent treatment, with its vacation periods, is bad can be seen from still another angle. The Wassermann reaction in the earliest stage of the syphilitic chancre, up to ten or twenty or more days, is not

2. Stokes, J. H., and others: *Compt. rend. des. séances, VIII Congr. internat. de dermat. et de syph.*, Copenhagen, 1930, p. 768.

revealed in the syphilitic patient's blood. This is known in syphilologic parlance as the seronegative phase of the disease. It is the most favorable time in which to institute therapy, diagnosis being made on the primary lesion by means of the darkfield illuminator or by study of smears made from the serum of the chancre and appropriately stained with Wright's, Giemsa's or Fontana's stains. As sufficient reacting bodies to the disease are built up in the blood stream, the Wassermann reaction changes from negative to positive. Ordinarily this takes place at from fifteen to thirty days after the inception of the infection, depending on various circumstances. This stage of the disease is spoken of as the seropositive stage and really is little different from the secondary stage of syphilis. Without therapy this positive reaction on the blood remains for some years, after which a negative Wassermann reaction may gradually develop in a certain number of cases. Certain phases of late syphilis are more prone to a positive Wassermann than others; e. g., dementia paralytica, in which one encounters around 90 per cent of positive reactions. With tabes, and especially with Charcot's joints, on the other hand, the percentage of negative reactions may reach as high as from 30 to 40. It is unfortunately true that the Wassermann reaction is the "sine qua non" to all too many physicians and that as long as the Wassermann reaction is positive treatment is indicated. While this is many times a mistake, yet a persistently positive reaction with no reversal to negative in the experience of the Cooperative Clinical Group was seen much more frequently when intermittent treatment was employed. In fact, with continuous therapy there was reversal of the reaction to negative in 82 per cent of the cases, as contrasted with but 37 per cent in which intermittent treatment with purposeful rest periods was employed. And with aimless, irregular treatment such as the patient all too often takes into his own hands there were but 5 per cent of Wassermann reversals. Undoubtedly most of the persisting positive blood Wassermann reactions in early syphilis can be laid at the door of purposeful rest periods in the course of treatment, thus allowing the spirochetes in the body to start multiplying once more and build up new foci of disease. The general waging a vigorous campaign against the enemy allows no respite, no breathing spells. The same policy should apply when the physician takes on himself the great responsibility of handling a case of early syphilis. If the victory is not won in the first two years, it is going to be a long campaign. Undoubtedly the rest periods offer opportunity for the laying down on syphilitic cardiovascular disease of central nervous system involvement and the like.

The amount of treatment administered also has a great bearing on the factor of relapse. In the Cooperative Clinical Group material, of those patients receiving twenty or more arsenical treatments with interim heavy metal, only 12 per cent had an infectious relapse, while, on the other hand, 64 per cent of the patients receiving but one to four injections of an arsenical with interim heavy metal had relapsed, while if even five to nine were given, but one-seventh as many patients relapsed. And in connection with syphilis of the central nervous system three times as many neurorecurrences developed if less than twenty injections of an arsenical with interim heavy metal were employed as when more than twenty were employed. Indeed from a study of relapses seen in the group material it was possible to draw the deduction that adequate treatment of at least

twenty to thirty injections of an arsenical and interim heavy metal in a case of early syphilis gave best promise of the patient's immune powers being supported and not broken down.

#### SYSTEMIC REACTIONS FROM ANTISYPHILITIC DRUGS

Before discussing the suggested outlines of treatment for various phases of syphilis, it may be well to devote a few words to systemic reactions observed from the drugs used. This is all the more important if one endeavors to follow more or less of a routine, especially in early syphilis.

Mercury is used less and less today, so that it is only necessary to recommend careful supervision of the kidneys in all patients taking mercurial preparations. Gastro-intestinal reactions in the form of diarrhea or bloody diarrhea, the patient himself will note. Fortunately the severe cases of mercurial stomatitis, even with ulceration, are rarely seen today.

With both bismuth compounds and arsenicals the kidneys are not so liable to be affected. Nevertheless, it is good practice with any patient under heavy metal therapy to examine the urine for albumin and red cells at every visit.

The patient undergoing treatment with heavy metals should be questioned at each visit as to any unforeseen happening following the last treatment. Gastro-intestinal reactions, itching of the skin, sores in the mouth, headaches, blurring of vision, may all be very significant. The gastro-intestinal reactions are usually the result of the arsenicals. If they persist with succeeding injections, despite abstinence from meals, it may require change of remedy. Occasionally the use of a tablet of Atropine Sulfate  $\frac{1}{100}$  grain (0.0006 Gm.) one-half hour before the injection may obviate the reaction. Or if the patient develops a nitritoid reaction at the time of the administration of the arsenical, an intramuscular injection of Epinephrine, from 0.3 to 0.5 cc. of a 1:1,000 solution, will be of great value. Itching of the skin or any cutaneous reaction following bismuth, but especially arsenical therapy, should be the signal for careful check up of the causation. The best treatment of heavy metal reactions in syphilis therapy is prophylaxis. Telltale bluish lines on the gums are seen after bismuth, and one may even observe ulcerations in advanced cases. Severe headaches and puzzling "grip-like" attacks are occasionally seen after bismuth injections, though they are rarely recognized. Blurring of vision may be encountered after tryparsamide therapy of central nervous system syphilis. No patient should receive this drug until his visual and color fields have been carefully checked. Contracted fields are probably a contraindication to this form of therapy and any patient complaining of visual disturbances following tryparsamide should, for the time, have the treatment discontinued. With severe cutaneous reactions from the arsenicals the use of emollient measures rather than of stimulating remedies will be most helpful; e. g.

#### Rose Water Ointment

	Gm. or Cc.
Rose Water Ointment.....	100.0
Misce. Signa: Apply locally as required.	

#### Emollient

	Gm. or Cc.
Boric Acid .....	5.0
Petrolatum .....	100.0
Wool Fat.....	aa ad
Oil of Lavender.....	q. s.
Misce. Signa: Apply locally as required.	

Some patients prefer plain Olive Oil in such a situation. Sometimes, when there is pruritus, the lotion given below will be found of value, the mercury being added to obviate folliculitis.

*Lotion of Phenylmercuric Nitrate and Tannic Acid*

	Gm. or Cc.
R Phenyl Mercuric Nitrate.....	0.018
Glycerite of Tannic Acid.....	45.0
Hamamelis Water .....	ad 180.0

Misce. Signa: Apply locally as required.

Certain patients with a generalized infected dermatitis exfoliativa will get much relief from the use of hot potassium permanganate baths in a dilution of 1:5,000.

Many times, in patients suffering from the foregoing chronic condition, the use of Solution of Liver, either by mouth in doses of one teaspoonful, three times a day in orange juice, or of intramuscular injections of Purified Solution of Liver, 2 cc. every two or three days, may be very helpful in starting a turn for the better.

Rarely, fortunately, does the physician encounter an arsenical hemorrhagic encephalitis. It generally comes after but two or three injections and is initiated with high fever, headache, muscular twitchings and convulsions. Lumbar puncture should be performed at once to relieve pressure, and venesection may be of value. Here again intravenous injections of Sodium Thio-sulfate 15 grains (1 Gm.) should be given once or twice a day for a few days if the patient survives that long. I have seen a patient already unconscious and having convulsions from this condition return to consciousness following a slow subcutaneous hypodermoclysis of 5 per cent dextrose, 500 cc. It may be repeated in three hours.

Hemorrhagic reactions following the use of the heavy metals should be the signal for their instant and probably permanent discontinuance. These reactions seem to be more frequent after the use of sulfarsphenamine, so much so that many syphilologists have discontinued its use. Blood dyscrasias have been seen after both bismuth compounds and arsenicals, and a routine white blood count, differential and platelet count should probably be done on every patient undergoing antisyphilitic therapy every two months, and in hospital practice this should be feasible every month.

With a granulocytopenia the first indication may be an acute deep ulceration in the throat. Transfusion is indicated, and pentnucleotide-N. N. R. may be tried, a 10 cc. vial injected intragluteally twice a day until the white blood cell count has definitely risen and thereafter once a day until the count has been normal for at least three days. Sodium Thiosulfate should also be used in 1 Gm. doses intramuscularly every day along with the same remedy by mouth in like doses of keratin coated capsules three times a day.

The appearance of icterus in the course of arsenical therapy is most disturbing. While syphilitic hepatitis is rare, it may occur, especially in an irregularly treated patient, or in a patient given purposeful rest periods. At times it is difficult to distinguish between a catarrhal icterus and an arsenical type. Probably all patients with icterus should have arsenicals discontinued for the time being, and if an arsenical process is finally diagnosed the patient should be treated with bismuth and mercury compounds in the future. Diet, elimination and Sodium Thiosulfate is indicated in such cases. Hypodermoclysis of 5 per cent dextrose solution may be of value. While not entirely convinced, I would

recommend in a severe case the trial of decholin sodium N. N. R. intravenously, 5 or 10 cc. of the 20 per cent solution. A second and third injection of 10 cc. may be given on the succeeding two days, followed by decholin by mouth, from 0.25 to 0.5 Gm. (4 to 8 grains), two or three times a day after meals for several weeks.

The physician treating the syphilitic patient should be constantly on the lookout for unusual or unforeseen symptoms. These should be signals to discontinue treatment until the causation is explained. There is nothing more inexcusable than to see a severe generalized exfoliating dermatitis in a case in which the physician has given another dose of an arsenical after the telltale eruption has already appeared. Prophylaxis, prevention, is the watchword in using heavy metals for syphilis.

TREATMENT OF SERONEGATIVE AND SEROPOSITIVE AND SECONDARY SYPHILIS

It should be understood that in attempting an outline of treatment for early syphilis that there are bound to be exceptions. Such an outline is given with the hope of furnishing an ideal for treatment in terms of present day knowledge. Many times it cannot be carried out. Perhaps the patient is susceptible to arsenical therapy, or it may be that he develops symptoms of kidney irritation after the use of the other heavy metals, or again he may be one of those individuals who develop severe headaches after the use of bismuth compounds. There are bound to be such exceptions to the routine of treatment.

Again, the problem of type of arsenical to be used must be considered. Undoubtedly arsphenamine is somewhat more potent than neoarsphenamine, but it is questionable that the average physician in office practice will use the former because of its greater potency. It requires more manipulation: it also requires the use of normal sodium hydroxide, 0.85 cc. for each 0.1 Gm. of the drug. This is not always available and if in stock may be deteriorated. Consequently the average physician prefers neoarsphenamine. It is kept preferably in the icebox in the dark. The desired dosage is best sprinkled over the surface of from 8 to 10 cc. of sterile distilled cold water and then dissolved by gentle rotation of the container. The dosage is injected very slowly intravenously by means of a 10 cc. glass syringe. The injection should last at least one minute. There are far fewer reactions where the drug is injected slowly. In hospital practice and in well equipped large offices arsphenamine may be preferred, as sufficient drug for several patients may be prepared at one time. The drug is administered by the gravity method in a dilution of from 10 to 20 cc. of water for each 0.1 Gm. The intravenous injection should be delivered slowly. Stokes has called attention to "rubber tubing" reactions.

Another arsenical being employed quite extensively, and accepted by the Council on Pharmacy and Chemistry, is Mapharsen. It is administered by the intravenous route and is notable for the freedom from reactions, outside of gastro-intestinal reactions, following its use. It is employed in dosages of from 0.03 to 0.06 Gm., and the drug, after being dissolved in from 5 to 10 cc. of distilled water, is administered rapidly intravenously. If the dose is given slowly, the patient may complain of pain up the arm. In this respect, rapidity of administration, it differs from arsphenamines. Mapharsen has now been used quite extensively and seems to have found a place in the therapy of syphilis. It may be used in place of arsphenamine or

neoarsphenamine as the arsenical, especially if there is any reason why the others cannot be employed.

There are many bismuth preparations on the market, and many of them are quite efficient. It probably would be well for the physician to learn the action of but a few, well tried ones and depend on them. If a slower, but comparatively constant bismuth action is desired, one may use a suspension in oil of bismuth subsalicylate 0.13 Gm. (2 grains) intramuscularly in the buttock once a week for a course of from eight to twelve weeks, depending on circumstances.

Again, if it is desirable to get a more rapid bismuth action, one may employ one of the soluble preparations. Naturally, they will be absorbed and excreted more rapidly; hence it will require their administration two or three times a week. Such a type of therapy would be indicated more in hospital practice and perhaps when the patient is arsenic sensitive, forcing the physician to depend on preparations of bismuth and mercury to treat the disease. As intramuscular injection of Thio-bismol 0.2 Gm. (3 grains) three times a week, of Iodo-bismitol 2 cc., or of the aqueous solution, bismuth sodium tartrate, 0.03 Gm. (one-half grain) two or three times a week would be indicated. Such therapy can be continued for a series of from fifteen to eighteen injections, depending on how the patient reacts.

#### REQUIRED TREATMENT FOR A CASE OF EARLY SYPHILIS

Given an average routine case of early syphilis, treatment should be kept up in a continuous form with alternating courses of arsenicals and preparations of bismuth or perhaps of mercury for at least one year after all signs and symptoms of the disease have disappeared. Thus the Cooperative Clinical Group<sup>3</sup> has found, from a study of several thousand cases of early syphilis, that anywhere from twenty to thirty, and preferably thirty, injections of arsphenamine and approximately the same number of insoluble bismuth injections or, under certain conditions, of mercury are necessary to give a satisfactory result. Neither drug should be used in less amounts, provided the patient stands them well. Too little of the arsenical or, again, too little of the bismuth may lead to resistant Wassermann-fast cases and to various types of relapse. In beginning the treatment of an early case of syphilis it is justifiable to shorten the intervals between the first three injections of the arsenical. This is done with the hope of getting the disease more rapidly under control. Moreover, with the last injection of each course of arsphenamine it is well to give the first injection of bismuth subsalicylate; thereby there is no interval of time in which the patient is not under continuous treatment. A Wassermann test of the blood should be made at the beginning and at the end of each course of treatment. Moreover, it is well to take a second Wassermann test the first and fifth days after the first arsenical injection of succeeding courses of treatment—the provocative Wassermann reaction. Often a negative reaction may be achieved by the end of the first or second course of treatment. It is desirable to hold this status, for treatment must be kept up for one year after all signs and symptoms have disappeared. A lumbar puncture should be done early in the course of the disease; otherwise a central nervous system involvement may be submerged temporarily by treatment. If it is negative, another should be

performed before the therapy is discontinued at the end of eighteen months or two years. If, under continuous therapy, there is a return to a positive Wassermann reaction on the blood, early cardiovascular or central nervous system involvement should be ruled out. It must be remembered that an occasional patient will relapse no matter what is done for him; fortunately these cases are not common.

A careful routine physical examination should be made of the patient on starting therapy and repeated at least once a year thereafter. Moreover, after treatment is discontinued there should be a careful neurologic examination and fluoroscopic examination of the cardiovascular stripe. For several years after therapy is discontinued the patient should have a Wassermann test every six months and thereafter once a year, along with the routine physical examination that every individual should receive.

#### Solution of Potassium or Sodium Iodide

℞ Potassium or sodium iodide.....	Gm. or Cc.
Distilled Water.....	aa 100.0
Misce. Signa: 10 to 20 drops in water after meals.	

The place of potassium iodide or sodium iodide in the treatment of syphilis is still debatable. There is no question of its value in late syphilis and where it is desired to achieve a breaking down of the connective tissue barriers of syphilomas. The drug is of value in syphilitic meningitis in even larger doses and it should probably be prescribed with the courses of heavy metals even in early syphilis.

For purposes of convenience, a chart modified from the Cooperative Clinical Group Studies<sup>4</sup> is appended. It is noted that the therapy for seropositive primary and secondary syphilis is somewhat longer than for seronegative primary disease. The bismuth employed should be of a type that will furnish from 0.080 to 0.12 mg. of metallic bismuth at a weekly injection; thus it limits itself to either a liposoluble preparation or to an oil suspension if but a single weekly injection is employed.

#### LATENT SYPHILIS

One of the most important phases of syphilis is the so-called latent syphilis. It is that period in which it is impossible to make a diagnosis of the disease except through a clear cut history and a positive blood Wassermann reaction; in fact, many times even the history is not obtainable. A case showing spinal fluid changes but no pathologic condition on physical examination would be classed not as latent syphilis but as symptomless syphilis of the central nervous system. These latent cases are important, as in this period a submerged syphilis may be silently preparing the way for more active symptoms; e. g., of the aorta or of the central nervous system. Moreover, they may be important from a public health aspect through danger of infectious relapse or, in the female, transmissal to the next generation through pregnancy. Probably 30 per cent of all syphilis is in the latent stage and demonstrates too well the urgent routine use of the Wassermann test on all new patients consulting the physician. With latent syphilis, as Moore<sup>5</sup> well puts it, "the aim of treatment is no longer radical but instead clinical arrest and the prevention of infection to others." Thus the outline already given may be modified slightly to con-

3. Stokes, J. H.; Cole, H. N.; Moore, J. E.; O'Leary, P. A.; Wile, U. J.; Parran, Thomas, Jr.; Vonderlehr, R. A., and Usilton, Lida J.: Standard Treatment Procedure in Early Syphilis, J. A. M. A. 102:1267 (April 21) 1934.

4. Venereal Disease Information 10:2 (Feb.) 1929.  
5. Moore, J. E., and others: The Treatment of Latent Syphilis, Ven. Dis. Inform. 13:317 (Aug.) 351 (Sept.), 371 (Oct.), 389 (Nov.), 407 (Dec.) 1932, 14:1 (Jan.) 1933.

sist of ten weekly injections of nearsphenamine followed by ten weekly injections of bismuth subsalicylate, each 0.2 Gm., the foregoing being alternately used up to a total of thirty injections of each. Sodium or potassium iodide is indicated the first year along with the heavy metal courses and in the second year between the courses of heavy metals.

In the second year three ten injection series of bismuth salicylate may be given, a rest period of ten weeks being allowed between the injections. Daily inunctions of Strong Mercurial Ointment 4 Gm. may be employed in place of the bismuth subsalicylate during the second year, from fifty to sixty rubs being considered a course of treatment.

The necessity of continuous therapy is not so urgent after the first year of the disease, as the patient's own immunity is probably built up to a certain extent. Following the period of treatment, whether the blood Wassermann reaction is positive or negative, it would be well to follow the patient yearly with complete physical examination and laboratory check up. This is the type of patient who all too often, because of a positive blood Wassermann reaction and nothing else, is treated on and on ad infinitum.

This type of treatment may be suitable for late tertiary syphilis of the skin and bones, provided there is no involvement of the cardiovascular system. Potassium or sodium iodide is indicated at once in all later stages of syphilis for the purpose of absorbing connective tissue walls around syphilitic foci. In such a case it might be well even to continue the heavy metal therapy with rest intervals over a further period of one year.

#### CARDIOVASCULAR SYPHILIS

The medical profession is now beginning to realize that cardiovascular syphilis is one of the commonest and severest complications of late syphilis. Moreover, a recent survey by the Cooperative Clinical Group has shown that 62 per cent of the patients with uncomplicated syphilitic aortitis, 76 per cent of those with aortic regurgitation and 84 per cent of the group aortitis with sacculated aneurysm had been previously untreated for their syphilis. On the other hand, in a series of cases followed from three to twenty years, none of the patients developed aortic regurgitation or aneurysm provided they had been adequately and regularly treated during the early stages of syphilis. It is thus evident that the best treatment of cardiovascular syphilis is prophylactic, thorough, continuous treatment of the early disease. On the other hand, once the disease is established, much will depend on the condition found. Bed rest may be necessary for a time, and in the presence of cardiac breakdown pulverized digitalis 0.1 Gm. is indicated. Patients with edema may also be benefited by the diuretic action of the heavy metal salts; e. g., bismuth sodium tartrate 0.03 Gm., iodobismitol 2 cc., thiobismol 0.2 Gm. or mercuric succinimide 0.015 Gm., injected intragluteally three times a week. Certain patients will be unable to stand any arsenical and the physician must depend on preparations of mercury, bismuth and the iodides. Some patients, however, are much benefited by their cautious use. After a preliminary course of either mercury or bismuth compounds to prevent therapeutic shock, the patient may be started very cautiously on nearsphenamine 0.05 to 0.1 Gm., gradually increased to a maximum dose of from 0.2 to 0.45 Gm. given to a maximum of ten to twelve weekly doses. Better results are achieved with smaller doses. In all cases, reactions of any type must be prevented in order to

relieve strain on an already overburdened myocardium. Between succeeding courses of nearsphenamine, courses of insoluble bismuth oil suspensions may be employed, e. g., bismuth subsalicylate, with good response. Alternating courses of the aforementioned drugs may be kept up for at least two years. Vigorous treatment must be avoided at all costs, and, naturally, every

#### Schema of Treatment for Early Syphilis

Day or Week	Neoarsphenamine, Gm.	Interim Treatment	Blood Wassermann Test	Comment
Day 1	0.3 to 0.45		1	Arsphenamine may be used, maximum 0.3 Gm. female to 0.4 Gm. male; mapharsen may be used in maximum 0.04 Gm. female to 0.06 Gm. male; spirochetes disappear from lesions in 24 to 48 hours; Wassermann reaction often negative by end of first course; do a lumbar puncture in this course of treatment; the first bismuth is given with the last arsenical injection
Weeks 3 to 10	0.45 to 0.6			
Week 3	0.6			
Week 4	0.6			
Week 5	0.6			
Week 6	0.6			
Week 7	0.6			
Week 8	0.6			
Week 9	0.6			
Week 10	0.6			
Week 11		Bismuth salicylate 0.2 Gm., 6 doses, 1 each week	1	
Week 12				
Week 13				
Week 14				
Week 15				
Week 16	0.6			
Week 17	0.6			
Week 18	0.6			
Week 19	0.6			
Week 20	0.6			
Week 21	0.6			
Week 22	0.6			
Week 23	0.6			
Week 24	0.6			
Week 25	0.6			
Week 26 to 33	0.6	Bismuth salicylate 0.2 Gm., 8 doses, 1 each week	1	
Week 34	0.6			
Week 35	0.6			
Week 36	0.6			
Week 37	0.6			
Week 38	0.6			
Week 39	0.6			
Week 40	0.6			
Week 41	0.6			
Week 42	0.6			
Week 43	0.6			
Week 44 to 54		Bismuth salicylate 0.2 Gm., 10 injections, 1 a week	1	Provocative Wassermann
Week 55	0.6			
Week 56	0.6			
Week 57	0.6			
Week 58	0.6			
Week 59	0.6			
Week 60	0.6			
Week 61	0.6			
Week 62	0.6			
Week 63	0.6			
Week 64	0.6			
Week 65 to 74		Bismuth salicylate 0.2 Gm., 10 injections, 1 a week	1	Patients with seronegative primary syphilis cease treatment if Wassermann always negative, after this course of bismuth; provocative Wassermann
Week 75 to 123		No treatment		Blood Wassermann every month or two
Week 123				Complete check up; physical examination; lumbar puncture; fluoroscopic examination of cardiovascular stripe; if both lumbar punctures are negative, no repetition required; physical examination every year and Wassermann, for a few years, every six months, and thereafter along with physical examination

patient with cardiovascular syphilis should be kept under close observation, treated according to symptomatology, and, if possible, given a certain amount of treatment throughout life.

#### SYPHILIS OF THE CENTRAL NERVOUS SYSTEM

The scope of this article will not allow anything more than a cursory review of which is considered good treatment for syphilis of the central nervous system. With early involvement of the central nervous system, a schema of treatment such as that suggested for early syphilis may be adopted, with the deletion of the first three doses of the arsenical in a space of ten days, the

doses being given once a week. Moore believes in the use of full doses of 0.75 Gm. of neoarsphenamine or 0.5 Gm. of arsphenamine in these cases. The treatment should be continuous, with alternating courses of arsenicals and preparations of bismuth. In case the process is of a vascular type or of a meningitic character, it may be well to hospitalize the patient and give a preliminary course of soluble heavy metal injections; e. g., iodobismutol 2 cc. or bismuth sodium tartrate 2 cc. twice a week for from eighteen to twenty-four injections, or of thiobismol 2 cc. three times a week for the same number of treatments. Naturally, potassium iodide or sodium iodide is indicated in such cases. Some men believe in the use of large doses; whether more will be achieved from enormous doses than from 1 to 3 Gm. three times a day is a question. In all syphilis of the central nervous system the effect of specific therapy should first be tried. Moreover, one is dealing with a disease due to an organism that is best met with such specific measures. The progress of the disease can be reviewed by the Wassermann reaction at the end of each course of treatment and by the lumbar puncture done every six months up to three or four times a year. More and more however the consensus is turning to the use of nonspecific therapy in all resistant syphilis of the central nervous system. Consequently, if after a year of treatment there has not been much response, a course of preferably malaria is to be recommended. In a recent comparison by Epstein, Solomon and Kopp<sup>6</sup> of malaria and diathermy in the treatment of dementia paralytica they found malaria to be preferable. If the patient can stand the treatment, a course of from ten to twelve or fifteen chills should be given. Following this treatment I prefer a course of neoarsphenamine, eight injections, each of 0.75 Gm., as soon as the patient is in a condition to stand it. This is given with the idea of attacking any surviving organisms that can be reached with specific measures. Then following a short course of bismuth injections the patient should be given a long course of tryparsamide, starting with an intravenous injection of from 0.5 to 1 Gm. and gradually working up to a maximum weekly dose of 2.5 Gm. As a preliminary to the treatment, the eyes should be carefully examined, as to both visual and color fields. If they are within the range of normal (not contracted) limits, the patient will probably have no reaction from this drug. Nevertheless, the physician should keep in mind the danger of damage to the optic nerve. Generally the symptoms show up within two or three weeks, with blurring and feathering of vision. In such a case treatment should be stopped for a week or more and later cautiously resumed. Often the therapy is continued up to a total of forty or fifty injections.

The patient with syphilis of the central nervous system is a problem in himself. It is difficult more than to outline the measures to be tried in such cases. A fair proportion will respond to the technic described; many will be resistant. On the other hand, there comes to mind a vascular central nervous system syphilis in a man aged 50, seen fifteen years ago, who never had anything except courses of injections of mercuric salicylate 0.09 Gm. intragluteally every week, or of bismuth subsalicylate 0.2 Gm., and potassium iodide by mouth. He is now clinically and serologically cured and his spinal fluid is entirely normal. At times the disease may respond quite satisfactorily; more often it will test the skill and knowledge of the physician at every turn.

#### SYPHILIS AND PREGNANCY

Moore<sup>7</sup> has made the statement that an untreated syphilitic woman has only one chance in six of bearing a living healthy child as compared with three chances in four with a healthy woman. And this ignores the further fact that in children born alive of syphilitic mothers both the mortality and the morbidity rates are much higher than among the children born of non-syphilitic mothers. However, prenatal syphilis is absolutely a preventable disease. It depends on frequent blood Wassermann tests throughout every woman's pregnancy and an immediate institution of specific therapy when the syphilis is discovered. Every pregnant woman should have a Wassermann test early in pregnancy, before the fifth month and again at the seventh or eighth month. The Cooperative Clinical Group<sup>8</sup> has found that far better results are achieved if the disease is discovered and therapy started before the fifth month of pregnancy giving preferably at least fifteen injections of arsphenamine or neoarsphenamine, and a like amount of appropriate heavy metal; e. g., bismuth salicylate. If syphilis is discovered late in the pregnancy, some treatment begun even at this time and continued up to the termination of pregnancy may be of great value in the production of a living child. If the pregnant syphilitic woman is seen early enough it may be possible to give a course of arsphenamine or neoarsphenamine or Mapharsen followed later by a course of bismuth. It is always well to terminate the therapy with an arsenical preparation because of its more potent action on the spirochetes. The woman who has had syphilis should probably be treated through every pregnancy because of danger of transmission of organisms to the fetus through the placental circulation. In isolated instances in which a patient is arsenic sensitive it would be well to give alternate courses of bismuth injections and of inunctions of Strong Mercurial Ointment up to the termination of the pregnancy, from forty to fifty rubs being considered as a course of treatment. The pregnant woman stands antisymphilitic therapy very well, the incidence of arsenical reactions being lower than in her nonpregnant syphilitic sister.

#### TREATMENT OF PRENATAL SYPHILIS

The best treatment, and likewise the correct treatment, of prenatal syphilis consists in the prophylaxis of the disease through discovering the mother's difficulty early and instituting adequate, continuous therapy up to the birth of the child. However, all too often the disease is discovered late or is never recognized until the birth of the child. In a way, such syphilis may be looked on as comparable to acquired syphilis in the secondary stage. It is generalized; the patient has built up little or no immunity to the process. Moreover, the lesions are of a high degree of virulence, so that from both the infant's standpoint as well as that of the public health it is essential that the disease be put under control as early as possible. For this purpose there is no drug to compare with the arsenicals. At Western Reserve University the drug neoarsphenamine is dissolved in from 2 to 3 cc. of distilled water and deposited under the loose tissues on the side of the scalp, next to the fascia. It is given in a beginning dose of 0.005 Gm. per kilogram and worked up to a maximum of 0.01 Gm. per kilogram. There is very little local reaction and the tissues of the buttocks are conserved for heavy metal

6. Epstein, S. H.; Solomon, H. C., and Kopp, Israel: *Dementia Paralytica*, J. A. M. A. **106**:1527 (May 2) 1936.

7. Moore, J. E.: *Modern Treatment of Syphilis*, Springfield, Ill., Charles C. Thomas, 1933, pp. 250-254.  
8. Cole, H. N., and others: *Cooperative Clinical Studies in the Treatment of Syphilis*, J. A. M. A. **106**:464 (Feb. 8) 1936.

injections. Moore prefers sulfarsphenamine in a beginning dose of 0.015 Gm., worked up to a maximum of 0.025 Gm. per kilogram. He feels that babies stand the therapy better than adults. He advises giving the injection concentrated in from 2 to 3 cc. of distilled water in the buttocks. Others are fearful of its use and employ Bismarsen N. N. R. (bismuth arsphenamine sulfonate) in a dose of 0.005 Gm. up to 0.01 Gm. per kilogram injected intramuscularly in 2 cc. of sterile distilled water. The infant may be given a course of from eight to ten such injections, followed immediately by a series of intramuscular injections of a bismuth salt; e. g., bismuth subsalicylate 2 mg. per kilogram for a total of eight injections. On the other hand, if injections are given twice a week one may employ in appropriate dose bismuth sodium tartrate, or iodobismutol. If desired, one may employ in place of the bismuth 1 Gm. of Strong Mercurial Ointment placed each day on the inner surface of the abdominal binder. The old fashioned mercury with chalk by mouth is prone to upset the stomach, though it may be tried occasionally as a course, from one-sixth to one-third grain (10 to 20 mg.), being given three times a day. The patient

#### *Mercury with Chalk*

R 100 pills, Mercury with Chalk..... 0.01 to 0.02 Gm.  
Signa: One, three times a day.

should receive at least four or five courses of the arsenical and of the alternating heavy metal. The blood Wassermann test should be taken several times a year and a lumbar puncture should be performed at the end of one year of treatment. As a rule, treatment should be kept up until the blood Wassermann and spinal fluid reactions have been negative for one year. As yet I am unwilling to recommend the indiscriminate use of acetarsone by mouth in the treatment of congenital syphilis. It is still too much in the experimental stage.

With late prenatal syphilis one is dealing with a disease to which the body has worked up a definite immunity. It is true that there are specific problems with this phase of prenatal syphilis; e. g., interstitial keratitis and syphilis of the central nervous system. Otherwise, the patient may be treated much as one with latent acquired syphilis, the arsenicals being used in dosage comparable to the weight of the individual. Potassium iodide or sodium iodide is indicated in these cases. Moreover, the treatment of late prenatal syphilis must be looked on as a possible prophylactic of more severe complications; e. g., of the central nervous system, eighth nerve deafness or interstitial keratitis.

In patients with interstitial keratitis it is essential that the diagnosis be made as early as possible and energetic alternating courses of neoarsphenamine or of arsphenamine or of Mapharsen, with bismuth be employed. For the bismuth, Moore sometimes substitutes intramuscular injections of mercuric succinimide 0.01 Gm. Potassium or sodium iodide is given in large doses from 2 to 6 Gm. a day, in old cases with scars, not in acute cases. Naturally, local therapy also is indicated. If the keratitis is seen in the early stages, it generally responds to this therapy. In older cases there may be more or less scar formation and difficulty with vision. It is well to continue the alternating arsenical and heavy metal therapy for at least two years. This may be the means of obviating relapses or of preventing possible extension to the other eye. Many times nonspecific therapy has been most helpful in the treatment of resistant keratitis; e. g., the intramuscular injection of boiled milk or the intravenous injection of

typhoid-paratyphoid vaccine. One may start with a dose of 1,000,000 and repeat in three hours, doubling the dose with each double injection and administering it every three or four days, for a series of from five to ten chills. Malaria therapy is especially valuable in old resistant keratitis, and I have seen it succeed when all other measures failed.

Involvement of the central nervous system in early or late prenatal syphilis is almost a problem to itself. The measures advised with acquired syphilis may be used. In juvenile tabes or dementia paralytica the outlook is very guarded. Even though the disease is checked there is usually little left except a vegetative animal. In other forms the response to therapy may be quite good. It is not advisable to use tryparsamide in prenatal syphilis; there is too much danger of misunderstanding and of damage to the optic nerve.

#### CONCLUSIONS

The best treatment for all forms of syphilis is prophylaxis. This can be achieved by better education of the public and of the physician, by the routine use of the Wassermann test or of similar flocculation tests in all our patients, especially in pregnancy when repeated tests should be made throughout the pregnancy. Moreover, routine Wassermann tests of all children would obviate much interstitial keratitis and eighth nerve deafness. Once syphilis has been discovered it should be thoroughly treated with arsenicals, bismuth preparations or mercury, exhibited in alternating continuous courses. The average cases of early syphilis require at least thirty injections of an arsenical and a like amount of heavy metal, and treatment should be kept up for one year after all signs and symptoms of the disease have disappeared. As explained in the text, appropriate measures must be adopted for syphilitic involvement of certain tracts or of special organs.

## Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.  
HOWARD A. CARTER, Secretary.

### AIRNET AIR FILTER ACCEPTABLE

Manufacturer: Airnet Air Filter Company, Chicago.

The Airnet Air Filter is designed to filter the outside air, eliminating a large percentage of the pollen, dust and dirt, for the relief of symptoms of hay fever. It is especially adapted for use in any ordinary room in home, office, hotel or hospital.

The portable metal cabinet used is 24 inches wide, 12 inches high and 12 inches deep. There is a triple louver in the back to keep out rain or snow. The unit has a 9 inch circular opening in the center of the front of the cabinet through which the filtered air is discharged into the room. Its shipping weight is 75 pounds.

A motor manufactured by a well known concern and fitted with a propeller type fan is used in this unit. The motor and fan are mounted in a tube 9 inches in diameter and 6 inches deep. This tube concentrates the filtered air and forces it through the opening in the front of the cabinet.

A double filtering unit  $2\frac{1}{2}$  inches wide, about 12 inches high and about 24 inches wide fits in the back of the cabinet. The outside air is drawn through openings in the back of the cabinet and then through the double filtering unit. There is an air space of about  $2\frac{1}{2}$  inches between the two filters. This



Airnet Air Filter.

air space between filters leads to efficiency, in the opinion of the firm, because it is more difficult for pollen, dust and dirt to pass the second filter.

The Airnet Air Filter supplies approximately 300 cubic feet of air per minute and uses about the same amount of current as a 40 watt lamp. It can be attached to any electric socket, alternating or direct current.

The manufacturer submitted evidence showing that more than 95 per cent of the pollen was eliminated by means of this unit and its cellulose filter. The device was tried in an institution acceptable to the Council and the firm's submitted evidence was verified.

In view of the favorable report, the Council voted to include the Airnet Air Filter in its list of accepted devices.

## Council on Foods

THE COUNCIL ON FOODS HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

FRANKLIN C. BING, Secretary.

### THE NUTRITIONAL SIGNIFICANCE OF GELATIN

Experimental investigations of the nutritive value of gelatin were begun early in the nineteenth century. A considerable mass of evidence has accumulated since that time. The older experiments, including the contributions of Voit and of Murlin on the so-called protein sparing action of gelatin, have been reviewed by Lusk<sup>1</sup> and others. In recent years much attention has been directed to the amino acid makeup of gelatin. The results of laboratory work have been reflected in advertising copy and in popular articles on nutrition. As might be expected, publicity that is promulgated by biased or scientifically untrained persons has been both favorable and unfavorable and, in the opinion of the Council, frequently has been misleading. Thus it has been stated that because gelatin is biochemically classed as an incomplete protein, lacking in certain essential amino acids, it is a food that should be avoided. And the use of gelatin as a means of increasing the protein content of the diet has been recommended just as enthusiastically as its use as a food has been condemned. Since the discovery of the dramatic success that has been reported to be attendant on the prescribing of aminoacetic acid to patients with certain myopathies, the advertising of one firm in particular has called attention to the relatively high proportion of this amino acid in gelatin and has suggested the use of gelatin in the treatment of muscular dystrophies. Gelatin has been recommended also for inclusion in the diet of infants. In the present report the Council has endeavored to evaluate the nutritional claims made for this food in the light of available evidence.

**Preparation and Composition of Gelatin.**—Gelatin is a protein derived from the collagen present in white fibrous tissue. It can be obtained from tendon, cartilage, bone and skin by boiling with water. This process is usually referred to as "hydrolysis," although there is some evidence that the changes involved are physical rather than chemical. There are several methods in common use for the commercial preparation of gelatin. Cow skins and trimmings are usually steeped for several weeks in a solution of lime water, then washed and boiled with water. Pig skins and trimmings are subjected to a preliminary treatment with acid. Bones are treated to remove the fat and mineral constituents, and the organic residue is largely converted into gelatin by boiling with water. Fish skins are a minor source of gelatin; they require only treatment with water to alter the collagen. Regardless of the source, there is obtained by appropriate preliminary treatment an aqueous solution containing gelatin. This is filtered, the water is evaporated, and the dried product is broken up and ground.

Gelatin is graded chiefly according to physical characteristics such as viscosity and jelly strength. These properties depend largely on the source of the gelatin and the method of manufacture. Different lots are therefore often tested and blended to make uniform products of the desired grade.

1. Lusk, Graham: *The Elements of the Science of Nutrition*, ed. 4, Philadelphia, W. B. Saunders Company, 1928, pp. 190, 365-367.

The dried gelatin usually consists of 85 to 90 per cent pure protein. A typical analysis of gelatin is recorded in table 1. The values for a powdered gelatin dessert are also listed because many persons think that the two products are almost identical.<sup>2</sup> It may be noted that the prepared gelatin dessert powders contain only about 10 per cent gelatin. Gelatin desserts can be prepared from edible gelatin as well as from the prepared mixtures; this may be advantageous in the preparation of low carbohydrate diets because of the possibility of omitting sugar from the final product.

Edible gelatin may contain traces of heavy metals which are present in the animal tissues from which the gelatin is derived. In order to guard against contamination during the manufacturing process the federal Food and Drug Administration has established certain limits of tolerance for arsenic, lead and copper in gelatin and other foods. These tolerances have been adopted also by the Council on Foods.

**Gelatin as a Source of Protein in the Diet.**—Many investigations over a period of years have brought out the significant fact that the nutritive value of proteins is measured largely by their digestibility and their amino acid makeup. It is interesting to note the occasional statement from prejudiced sources that because gelatin is obtained by partial hydrolysis it is partly digested to begin with and therefore is easily digested when eaten. Of course gelatin is readily digested by the proteolytic enzymes of the alimentary tract; but from the practical point of view the ready digestibility of gelatin does not confer on it any superiority over the common proteins.

The most extensive analysis of gelatin for amino acids is that reported by Dakin in 1920. His figures, which were

TABLE 1.—Typical Analyses of Gelatin and Gelatin Dessert Powder

	Gelatin, per Cent	Gelatin Dessert Powder, per Cent
Moisture .....	10.0	0.8
Ash .....	1.2	0.2
Fat (ether extract) .....	0.0	0.0
Protein (N × 5.5) .....	88.5	11.0
Carbohydrates .....	0.0	86.0
Tartaric or citric acid .....	none	2.0
Added flavor .....	none	present
Added color .....	none	present
Calories per gram (approximate) .....	3.5	3.9

based largely on the isolation of the individual amino acids, are recorded in table 2, together with additional data obtained by later investigators.<sup>3</sup> It is interesting to note that the sum of the nitrogen in the form of the various amino acids, plus the ammonia nitrogen reported by Dakin, amounts to 91 per cent of the nitrogen of gelatin. From the standpoint of our present knowledge of protein composition, this means that the amino acid makeup of gelatin is well known. The figures show that a number of amino acids have not been found in gelatin or are present in very small concentration. Valine, isoleucine, hydroxyglutamic acid and tryptophane are lacking. Tyrosine, cystine and methionine are present in small amounts. According to the results obtained in the feeding experiments of Rose and his collaborators, the essential amino acid which was later identified as alpha-amino-beta-hydroxybutyric acid<sup>4</sup> (and now called threonine<sup>5</sup>) is present in much smaller amounts in gelatin than in the casein of milk.<sup>6</sup> To date the following amino acids have been shown by feeding experiments with animals to be essential for growth: leucine, isoleucine, histi-

2. The values of gelatin are from the analysis published in *THE JOURNAL* Feb. 27, 1932, p. 737, and of the powdered gelatin dessert from the analysis published May 12, 1934, page 1566.

3. The references to the investigators named in table 2 are as follows:

Dakin, H. D.: *J. Biol. Chem.* 44: 499 (Nov.) 1920.

Looney, J. M.: *J. Biol. Chem.* 69: 519 (Aug.) 1926.

M. T. Hanke (*J. Biol. Chem.* 66: 489 [Dec.] 1925) found 0.25 per cent in commercial gelatin.

Folin, Otto, and Looney, J. M.: *J. Biol. Chem.* 51: 421 (April) 1922.

Jones, D. B.; Gersdorff, C. E. F., and Moeller, O.: *J. Biol. Chem.* 62: 183 (Nov.) 1924.

Raerstein, H. D.: *J. Biol. Chem.* 97: 663 (Sept.) 1932.

May, C. E., and Rose, E. R.: *J. Biol. Chem.* 54: 213 (Oct.) 1922.

Bergmann, Max: *J. Biol. Chem.* 110: 471 (July) 1935.

4. McCoy, R. H.; Meyer, C. E., and Rose, W. C.: *J. Biol. Chem.* 112: 283 (Dec.) 1935.

5. Meyer, C. E., and Rose, W. C.: *J. Biol. Chem.* 115: 721 (Oct.) 1936.

6. Ellis, R. H., and Rose, W. C.: *J. Biol. Chem.* 94: 167 (Nov.) 1931.

dine, lysine, cystine or methionine,<sup>7</sup> phenylalanine, tryptophane and threonine. Future investigation may show that the animal body is incapable of synthesizing other amino acids.<sup>7a</sup> According to available data, gelatin may be classed as an incomplete protein because it lacks or contains too low a concentration of isoleucine, tryptophane and methionine.

It is the opinion of the Council that the amino acid composition of gelatin is of no practical disadvantage unless gelatin is the sole source of protein in the diet. The essential amino acids that are lacking in gelatin can and should be obtained from other sources in the diet. No one would attempt to live on a diet in which gelatin forms the sole source of protein. As a matter of fact, several investigators have attempted this feat as a scientific experiment without success. Kauffmann<sup>8</sup> reported in 1905 some feeding experiments in which he derived nitrogen entirely from gelatin supplemented with tyrosine, cystine and tryptophane and remained in nitrogen balance for a few days. His experiments, however, are inconclusive and are of historic interest only.

Gelatin, because of its swelling properties, cannot be eaten readily in the dry form or sprinkled on cereal. It is usually consumed as a solution which, if the concentration of gelatin is approximately 1 per cent or more, forms a gel on cooling. An ordinary serving of a gelatin dessert contains about 2.5 Gm. of gelatin. Recipes have been suggested in which a concentration of gelatin as high as 10 per cent may be prepared in the form of hot soups. It requires considerable ingenuity, however, to formulate a menu that contains more than about an ounce of dry gelatin per day.

Much information of lasting value has been gained through experimental studies of the nutritive advantages and disadvantages of gelatin. The report by Jackson and his collaborators<sup>9</sup> includes a review of the work to 1929 on the supplementary value of gelatin added to other proteins in the diet of rats. Thus it has been shown by Osborne and Mendel<sup>10</sup> that gelatin, which contains a relatively high concentration of lysine, will supplement gliadin, which contains about one-tenth as much of this essential amino acid. However, the application of these observations to human nutrition is obscure. The human being does not ingest synthetic diets, and an actual deficiency of lysine in the diet has never been demonstrated.

The suggested use of gelatin (containing 25 per cent of aminoacetic acid) in the treatment of the myopathies has already been mentioned. The dosage of aminoacetic acid in the treatment of myasthenia gravis or pseudohypertrophic muscular dystrophy usually is from 20 to 30 Gm. It should be apparent that gelatin can furnish only a small proportion of the proper dosage of this amino acid. In the opinion of the Council it is improper for manufacturers to exploit gelatin in connection with the observations on the use of aminoacetic acid in the treatment of the myopathies. Even if it were possible to secure appreciable quantities of aminoacetic acid by eating large quantities of gelatin, the recommendation to do so is objectionable. Each patient requires a specific amount and, in the opinion of the Council, to try to take aminoacetic acid in the form of gelatin would not only be haphazard but in many cases ineffective.

**Other Uses of Gelatin of Interest in Nutrition.**—Because of its characteristic physical properties, gelatin has a number of uses in the food industry. For example, it is customary to incorporate about 0.5 per cent of gelatin in many ice cream mixtures.<sup>11</sup> It is added in order to improve the "smooth" consistency of the product by enhancing its ability to be whipped and in other ways. Gelatin may also be an important ingredient of confections such as marshmallows.

**Effect of Gelatin on Digestibility of Milk.**—Of particular interest to physicians is the evidence regarding the effect of the addition of gelatin to milk. This has been supposed to

increase the digestibility of the milk and in the past the use of gelatin in infant feeding was looked on with favor among pediatricians. It has been thought that gelatin as a colloid would coat the newly formed casein curds in the stomach and prevent their coalescence into larger curds. Some evidence has been obtained which indicates that the curd formed when milk plus gelatin is treated with acid tends to be softer than the curd formed with milk alone plus acid.

Clinical studies of the value of gelatin in infant feeding have yielded questionable or conflicting results. Julius Hess and Chamberlain<sup>12</sup> reported an outpatient study on infants fed gelatin. The gelatin was well tolerated but there was a tendency toward the formation of foul smelling, firm stools which were grayish yellow and which at times were passed with difficulty. Other infants receiving egg yolk in place of gelatin passed stools which were more plastic and in general were canary colored. Perlman<sup>13</sup> observed a slightly higher growth rate in infants fed gelatin than in infants fed the same diet without gelatin. From the observations reported by Elterich, Boyd and Neff<sup>14</sup> as a result of a careful study of eleven infants under hospital supervision, it may be concluded that gelatin does not specifically accelerate growth but may increase the caloric intake.

The use of gelatin in the form of an isotonic solution which also contained dextrose and sodium chloride has been suggested

TABLE 2.—Amino Acids in Gelatin

	Dakin	Other Investigators
Aminoacetic acid .....	25.5	25.7 (Bergmann)
Alanine .....	8.7	
Valine .....	0	
Leucine .....	7.1	
Isoleucine .....	0	
Serine .....	0.4	
Phenylalanine .....	1.4	
Tyrosine .....	0.01	0 (Looney; Hanke)
Proline .....	9.5	19.7 (Bergmann)
Hydroxyproline .....	14.1	14.4 (Bergmann)
Aspartic acid .....	3.4	
Glutamic acid .....	5.8	
Hydroxyglutamic acid ..	0	
Histidine .....	0.9	
Arginine .....	8.2	
Lysine .....	5.9	0.16 (Looney; Folin and Looney; Jones, Gersdorff and Moeller)
Cystine .....		0.97 (Baernstein)
Methionine ..		0 (Looney; Folin and Looney; Jones, Gersdorff and Moeller; May and Rose)
Tryptophane ..		

by Kugelmass<sup>15</sup> and by Halpern<sup>16</sup> for the prevention of weight losses in the first few days of life of new-born babies. Senn,<sup>17</sup> however, while confirming the fact that loss in weight is not so great when this solution is used, concluded that it is not a safe therapeutic procedure because it occasionally gives rise to edema formation and fails to prevent dehydration fever.

**Allowable Claims for Gelatin.**—In view of the available evidence the Council believes that gelatin properly made is a wholesome food, that it has special usefulness when one desires to add variety to the diet by incorporating gelatin in nutritious soups or pleasant desserts which appeal to the appetite of many persons, and that for these reasons gelatin is often a useful food for inclusion in the diet of healthy persons or of sick or convalescent patients. Gelatin appears to be well tolerated. The claim that gelatin is an aid in the digestion of milk, however, is in the opinion of the Council not established. The claim that gelatin is of value as a source of aminoacetic acid in the treatment of some of the myopathies cannot be recognized; in the light of present evidence, gelatin has no special significance as a source of amino acids in the diet. Indeed, it is notoriously deficient in certain essential amino acids.

12. Hess, J. H., and Chamberlain, I. McK.: *Gelatin Added to Diets of Artificially Fed Infants*, J. A. M. A. 89:1423 (Oct. 22) 1927.

13. Perlman, H. H.: *Arch. Pediat.* 45:14 (Jan.) 1928.

14. Elterich, T. O.; Boyd, D. H., and Neff, Andrew: *Arch. Pediat.* 47:286 (May) 1930.

15. Kugelmass, I. N.; Berggren, R. E. L., and Cummings, Mildred: *Preventing Loss of Weight in the New-Born*, Am. J. Dis. Child. 40:280 (Aug.) 1933.

16. Halpern, L. J.: *J. Pediat.* 5:40 (July) 1934.

17. Senn, M. J. E.: *J. Pediat.* 7:352 (Sept.) 1935.

7. There is conclusive evidence that methionine can replace cystine; at the present time it is doubtful whether cystine can replace methionine.  
7a. W. C. Rose and his collaborators have reported before the 1936 meeting of the Society of Biological Chemists that valine, an amino acid not present in gelatin, is indispensable in the diet.  
8. Kauffmann, M.: *Arch. f. d. ges. Physiol.* 109:440, 1905.  
9. Jackson, R. W.; Sommer, B. E., and Rose, W. C.: *J. Biol. Chem.* 80:167 (Nov.) 1928.  
10. Osborne, T. B., and Mendel, L. B.: *J. Biol. Chem.* 13:233, 1912-1913.  
11. Rogers, L. A., Associates of: *Fundamentals of Dairy Science*, ed. 2. American Chemical Society Monograph Series, New York, Reinhold Publishing Corporation, 1935, p. 264.

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SATURDAY, DECEMBER 26, 1936

## RESPIRATORY IRRITANTS: THEIR EFFECTS AND PREVENTION

Little has been written on the influence of soot on the development of tumors of the lungs. The concentration of coal smoke in most of the large cities in this country, however, is such that it is important to determine the effects of this daily contamination of the inspired air. Seelig and Benignus<sup>1</sup> have reported an experimental study dealing with the carcinogenic power of soot on the lungs. They endeavored to determine whether or not the soot deposited out of coal smoke played a part in the development of tumors of the lung in white mice. The soot used in the experiments was secured by sweeping the flue of a hospital furnace that burned Kentucky bituminous nut coal, and it was substituted for sawdust and shavings as a bedding material for the mice. Dust from the soot was raised by the normal activity of the mice, but in addition each cage was violently shaken two or three times a day. The principal constituents of the soot were silica, tarry matter, sulfur and volatile salts, including ammonia. One hundred mice were subjected to this atmosphere of soot dust, and fifty controls were kept under normal laboratory conditions at a distance from the cages containing the experimental animals. The animals of both groups were about 3 months old. As each mouse died, a necropsy was performed, except on the thorax, after which the mouse was placed in 10 per cent solution of formaldehyde with the lungs in situ. After three or four days the lungs were removed, embedded in paraffin and sectioned serially. At the end of six months, 20 per cent of both groups had died. At the end of a year, about 60 per cent of the animals in both groups had died, and at the end of eighteen months all the animals had succumbed. The histologic study showed that in the control group of fifty mice there was only one with adenocarcinoma of the lung, an incidence of 2 per cent. In contrast to this, eight mice in the experimental group

showed adenocarcinoma of the lung, an incidence of 8 per cent. In two additional mice there were tumors resembling bronchiogenic carcinomas, but these were eliminated since they could not be differentiated from active nonmalignant intrabronchial hyperplasia.

Since the mice subjected to soot dust showed an incidence of lung cancer four times as great as the control group, the next question was What is the comparative incidence of human cancer of the lung in urban and rural communities? The available data were tabulated for the authors by Dr. Halbert L. Dunn of the United States Bureau of the Census. Although a consistent and markedly higher death rate in the cities is noted in these tables, too many factors enter into an interpretation of the census figures to permit dogmatic conclusions. These figures provide sufficient evidence, however, to show the necessity for further studies of the subject.

Coal dust is not the only irritative constituent of the air that may be a menace to the public health. Some problems of respiratory protection in the petroleum industry have been discussed by Kintz and Fowler<sup>2</sup> of the U. S. Bureau of Mines. An atmosphere is dangerous when it contains one or more foreign substances, such as gas, dust, mist or fumes, in sufficient quantity to be harmful or explosive, or when it does not contain enough oxygen to allow working with maximum efficiency or to support life, or when the temperature and humidity are too high for human endurance. Satisfactory solution of problems created by atmospheric conditions that are unsafe or detrimental to the health and efficiency of workers can be reached, these writers say, only after careful analysis of individual circumstances. The specific impurity in the air to which each worker on each job is exposed must be determined, its dangers recognized, and effective protective measures taken—measures that not only protect but offer a minimum of inconvenience to the worker.

Some methods for determining the relative harmlessness of atmospheric conditions are available. Detectors for inflammable gas, toxic gas, pyrotannic acid, carbon monoxide and hydrogen sulfide are available. Deficiency in the oxygen content of the air can also be determined. Instruments are available for counting and recording the amount of dust in the air. The most satisfactory procedure when possible is to render the inspired air harmless. Under some circumstances this does not seem to be always possible. When it is necessary for individuals to live under dangerous atmospheric conditions, the oxygen supply and the nature and degree of harmfulness of the toxic substances in the air should be known as accurately as possible. Such protective equipment as the canister-type gas mask, dust respi-

1. Seelig, M. G., and Benignus, E. L.: Coal Smoke Soot and Tumors of the Lung in Mice, *Am. J. Cancer* 28: 96 (Sept.) 1936.

2. Kintz, G. M., and Fowler, H. C.: Some Problems of Respiratory Protection in the Petroleum Industry, with Suggestions for Their Solution, U. S. Bureau of Mines Information Circular 6915, November 1936.

rators, self-contained oxygen breathing apparatus, hose masks and air-line respirators may serve a limited purpose.

Intense interest has been stimulated in certain quarters in the problems of respiratory irritants, and factual data are rapidly accumulating. The interest also of those not technically employed in this field should be stimulated toward the public health problems involved.

#### LOSS OF CEVITAMIC ACID

Once the constitution and chemical nature of vitamin C (cevitamic acid) were established, it became possible to develop strictly chemical methods for determining this dietary essential in food materials, tissues and body fluids. The most widely used method employs the readily reduced organic compound 2,6 dichlorophenol indophenol as an indicator; the specificity of the reaction as well as the comparison of the results so obtained with the time-consuming bio-assay on guinea-pigs has received careful attention. The wide usefulness of the titration method has been demonstrated. Thus, not only is it possible to note changes in the vitamin C content of foods as a result of processing—cooking, pasteurization, storage—but the localization of cevitamic acid in certain animal tissues and the variations in its concentration in blood and urine can be determined in a relatively short time.

That the content of this dietary essential in the plasma parallels its content in the urine has been indicated by Greenberg, Rinehart and Phatak.<sup>1</sup> The average value for plasma vitamin C in twenty-five normal human subjects excreting more than 50 mg. in the urine was 0.92 mg. per hundred cubic centimeters, whereas thirteen subjects excreting less than 50 mg. had 0.44 mg. per hundred cubic centimeters in the plasma. The responsiveness of plasma concentration to intake is shown by the appreciable rises (from 15 to 69 per cent) in plasma level within two to four hours after the ingestion of 6 ounces of orange juice. The thirty-eight normal subjects were further classified into groups according to the approximate antiscorbutic value of their diet. The cevitamic acid content in the plasma of the eleven subjects rated as low was found to be 0.55 mg. per hundred cubic centimeters; of the nineteen rated as fair, 0.75 mg., and of the eight rated as good, 1.10 mg.

These studies show the wide variation in the vitamin C content of the blood of so-called normal individuals and the close correlation with the amount ingested. That the foregoing relationships merit attention in the clinic is emphasized by the recent observations of Daniels and Everson<sup>2</sup> that ingestion of

acetylsalicylic acid is followed by a pronounced increase in cevitamic acid in the urine. Thus, on a constant dietary regimen, four children given  $2\frac{1}{2}$  grains (0.16 Gm.) of the drug showed from 100 to more than 200 per cent increase in the loss of vitamin C in the urine. It is obvious that, in certain cases in which prolonged administration of acetylsalicylic acid is required, particular attention must be given to the allowance of vitamin C lest scurvy appear. Doubtless other similar antagonisms exist. As the human requirement for most of the recognized indispensable accessory food substances is not known, it follows that, so far as possible, optimal nutrition should be maintained in treating the patient.

#### EXTRASYSTOLES

Extrasystoles, the most common cause of irregularity of the heart's action, were formerly regarded as a symptom of myocardial damage. A valuable part of Sir James Mackenzie's great work was the clinical differentiation between extrasystoles and auricular fibrillation; at the same time he showed the relative unimportance of the former and the importance of the latter. However, to deny any significance to extrasystoles would be to lose a sign which might help in diagnosis and treatment. According to Boas and Levy,<sup>1</sup> at least 50 per cent of patients with extrasystoles have normal hearts as far as can be determined. They occur in a large proportion of elderly men and not infrequently in young subjects. Mackenzie<sup>2</sup> noted premature beats in a man at the age of 69 in whom they were first discovered at the age of 18. This patient had earned a living at work that entailed great bodily strain and yet he was in fairly good health after fifty-one years with premature beats. Grassmann<sup>3</sup> reported a case in which they were known to be present for sixty-seven years. Extrasystoles are said to arise from an irritable focus in the musculature of the auricles or of the ventricles or from the auriculoventricular node. It is sometimes possible to differentiate clinically between the sites of origin. When extrasystoles originate in the auricle, the normal rhythm from the sino-auricular node is generally disturbed and there is no compensatory pause. When extrasystoles originate in the auriculoventricular node or in the ventricle, the sino-auricular rhythm is maintained. There is then a compensatory pause after the premature beat, and the intervals before and after it are together equal to two normal beats. When the extrasystole is ventricular, the auricular wave (P) in the electrocardiogram is unaffected in shape and position but may or may not be visible, owing to its inclusion in the ventricular complex (QRST).

1. Boas, E. P., and Levy, Hyman: Extrasystoles of Clinical Significance, *Am. Heart J.* **11**: 264 (March) 1936.

2. Mackenzie, James: *Diseases of the Heart*, London, Oxford University Press, 1913.

3. Grassmann, Karl: Zur prognostischen Wertigkeit und Behandlung der praktisch-wichtigsten Herzrhythmen, *München. med. Wchnschr.* **67**: 5 (Jan. 2) 1920.

1. Greenberg, L. D.; Rinehart, J. F. and Phatak, N. M.: *Proc. Soc. Exper. Biol. & Med.* **35**: 135 (Oct.) 1936.

2. Daniels, Amy L., and Everson, G. I.: *Proc. Soc. Exper. Biol. & Med.* **35**: 20 (Oct.) 1936.

The causes of extrasystoles are not always clear. There is slight support for the theory that they are more likely to arise in the cardiac area, where there is the greatest strain. Campbell<sup>4</sup> reported their presence in about 20 per cent of 500 consecutive cases in the cardiographic department at Guy's Hospital. About one fourth of these patients apparently had no heart disease whatever; another one fourth had rheumatic heart disease; pregnancy seemed to be the exciting cause in some cases. High blood pressure (over 170) accounted for 16 per cent, and myocardial or atheromatous changes for 18 per cent. A few cases were associated with exophthalmic goiter, with syphilitic arterial disease and with the administration of quinidine. Extrasystoles may be induced by smoking or by coffee, or by the administration of digitalis or the salicylates; such extrasystoles disappear when the offending agent is removed. Acute infections can be the immediate cause of extrasystoles. When they appear suddenly in the course of an acute infection it is an indication that the heart has been injured by the infectious process. Extrasystoles that arise in the auricles in patients with mitral stenosis are said to presage the appearance of auricular fibrillation. They may be closely linked with progressive disease of the coronary arteries, especially when they appear for the first time in middle age or later. Boas and Levy<sup>1</sup> observed a significant relationship between the occurrence of extrasystoles and of anginal attacks. In the records of 974 patients with coronary sclerosis, fifty-three had extrasystoles. Twenty-one per cent of these fifty-three patients had died, whereas only 10.4 per cent of the 921 patients with coronary disease without extrasystoles had died.

Extrasystoles are encountered less frequently as the heart rate becomes more rapid. They are exceedingly rare at heart rates of 120. For this reason they are unusual in febrile diseases and in hyperthyroidism. Physical exercise usually abolishes extrasystoles simply by accelerating the heart rate. Boas and Levy analyzed 183 cases in private practice that presented extrasystoles. In two thirds of these cases the heart rate was between 70 and 100. Ventricular extrasystoles did not occur in patients whose hearts were normal at heart rates above 110, and in only two instances (both children) did auricular extrasystoles occur at these rates. The great majority of their patients who had extrasystoles during rapid heart rates had definite myocardial disease. Extrasystoles were not present in patients with hyperthyroidism except in the presence of complicating heart disease and multifocal extrasystoles. In persons whose hearts are otherwise normal, extrasystoles do not portend present or future heart disease, and their appearance in frank heart disease usually does not add to the gravity of the prognosis.

4. Campbell, Maurice: The Etiology and Significance of Extrasystoles, *Guy's Hosp. Rep.* 79: 142-158 (April) 1929.

## Current Comment

### PAINTING THE ORANGE

Today the orange is universally recognized as a rich source of vitamin C and therefore a desirable fruit for children. The natural color and other characteristics of the rind vary with different varieties and with the season. Once these features served to some extent as marks of identification. This is not true today, when there is current a tendency to "improve on nature." The inherent color of the rind of certain varieties of the orange is not an index of maturity of the fruit or of the degree of sweetness of the juice. Green pigment persists in the skin of mature fruit of high quality. Many growers apparently believe that the presence of chlorophyll in the pericarp impairs the marketability of the fruit. Several years ago the practice of exposing oranges to ethylene gas for from two to four days was introduced. The ethylene causes a blanching of the green color and a consequent unmasking of the yellow pigments also present in the skin. The United States Department of Agriculture has ruled that this process does not in itself constitute adulteration, and there is evidence that the nutritional value of the juice is not affected by it. More recently a rapid method of coloring has been employed. The fruit is dipped in a solution of a harmless coal tar dye, which gives to the resulting "painted oranges" a more uniform, brilliant color. Food laws require that the presence of dyes must be declared by having the phrase "color added" stamped on each orange. The staining of unripe or damaged fruit by any method in simulation of oranges of greater maturity or of superior quality constitutes adulteration under the Food and Drugs Act. The degree of maturity of the orange is determined by chemical analysis of the amount of sugar and citric acid in the juice. Unless there are eight parts of sugar to each part of acid, the fruit is held to be unripe and inferior. The state of Florida has recently provided rigid regulation of the packaging and marketing of citrus fruit according to more exacting standards than those required by the federal government. The United States Department of Agriculture accordingly has agreed to wait until September 1937 before action will be taken. Thereafter interstate shipments of inferior oranges that have been colored will be liable to seizure and destruction. The Florida regulations in large measure should serve to remove the necessity for federal action. Accurate information concerning the effect of the artificial coloring of oranges on the consumption of the fruit is not available. The phrase "color added" stamped on each stained orange has certainly puzzled alert housewives, many of whom under the direction of their family physician are buying oranges for the baby. Consumers have questioned whether the colored oranges are of high quality. They have tasted the juice warily and have inquired whether the vitamin content is as high as in the uncolored fruit. Some consumers have expressed the opinion that colored oranges do not keep as well as the untreated russet colored fruit. Others have asked whether the "painted" rind is suitable for

making marmalade and candied orange peel. These questions are evidence of intelligent interest on the part of the public. The promulgators of the coloring of oranges should arrange to answer them decisively by scientific evidence.

## Association News

### RADIO BROADCASTS

The American Medical Association and the National Broadcasting Company are presenting the second series of dramatized health broadcasts under the title *Your Health*. The first broadcast in the new series, the thirty-second dramatized cooperative broadcast under the title *Your Health*, was given October 13. The theme for 1936-1937 differs slightly from the topic in the first series, which was "medical emergencies and how they are met." The new series is built around the central idea that "100,000 American physicians in great cities and tiny villages, who are members of the American Medical Association and of county and state medical societies, stand ready, day and night, to serve American people in sickness and in health."

The program will go out on the Blue network instead of on the Red network, as originally announced.

The topics are announced monthly in advance in *Hygeia*, the Health Magazine, and three weeks in advance in each issue of *THE JOURNAL*. The topics and speakers for the next three programs are:

- December 29. Health Assets and Liabilities. W. W. Bauer, M.D.
- January 5. "Smog." W. W. Bauer, M.D.
- January 12. Winter Health Hazards. W. W. Bauer, M.D.

The time of the broadcast is Tuesday afternoon at 4 o'clock central standard time (5 o'clock eastern time, 3 o'clock mountain time, 2 o'clock Pacific time).

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

### ARKANSAS

**Annual Reregistration Due January 1.**—Every licentiate of the Arkansas Eclectic Medical Examining Board must register annually with the secretary of the board between January 1 and the last day in February and pay a fee, if a resident of Arkansas, of \$2 and, if a nonresident, of \$4. The failure of a licentiate to pay the required fee by March 1 automatically suspends his right to practice while delinquent. If he fails for three successive years to pay the required fee, his license is to be cancelled, and thereafter he will be reinstated only on such a showing to the board of moral character and professional qualifications as would entitle the applicant to the issuance of an original license and the payment of the same fees as are required for the issuance of an original license.

### CALIFORNIA

**Plague Infection.**—According to *Public Health Reports*, plague infection has been proved, by animal inoculation, in fleas taken from twenty-four ground squirrels, *Citellus beechei* fisheri, shot October 10, in Holcomb Valley, six miles north of Pine Knot, in San Bernardino County.

**Annual Registration Due January 1.**—Every practitioner of medicine and surgery holding a license to practice in California is required by law to register annually, on or before January 1, with the secretary-treasurer of the board of medical examiners, and at that time to pay a fee of \$2. Failure to pay the required fee within sixty days after January 1 works a revocation of a license and thereafter a license may be reissued only after application and the payment of a \$10 penalty.

**Society News.**—Dr. David G. Ghrist, Glendale, addressed the San Diego County Medical Society, December 8, on "Differential Diagnosis and Treatment of Chronic Arthritis."

At a meeting of the San Diego Academy of Medicine, December 3, Dr. John H. Musser, New Orleans, was the guest speaker.—At a meeting of the staff of Peralta Hospital, Oakland, Drs. John W. Sherrick and Emery R. Ranker discussed chorio-epithelioma of an ovarian pregnancy and of the testis respectively, among other speakers.

**Fifty-Fifth Series of Popular Lectures.**—Stanford University School of Medicine, San Francisco, announces the fifty-fifth series of popular medical lectures to be given in Lane Hall on alternate Friday evenings during the winter quarter. Following is the schedule:

- Dr. Jacques P. Gray, San Francisco, January 8, Syphilis and Its Control.
- Dr. Benjamin W. Black, Oakland, January 22, The County Hospital and the Public.
- Dr. William C. Voorsanger, San Francisco, February 3, Recent Advances in the Treatment of Tuberculosis.
- Dr. Frederic C. Bost, San Francisco, February 19, The Crippled Child.
- Sanford M. Moose, D.D.S., San Francisco, March 5, Behind the Scenes of Pain Relievers in Dentistry.
- Dr. Jay Marion Read, San Francisco, March 19, The Rising Death Rate from Heart Diseases.

### COLORADO

**New Tuberculosis Research Laboratory.**—A tuberculosis research laboratory has been established in Colorado Springs, to be operated by the Colorado Research Foundation assisted by scientists of the Colorado College. The laboratory was financed by the city of Colorado Springs and the PWA. It contains 3,000 square feet of floor space divided into twelve rooms including a monkey room, guinea-pig and rabbit quarters, five individual laboratories, x-ray room, spectrographic room, photographic dark room, director's office and sterilizing room.

### CONNECTICUT

**Annual Registration Due During January.**—Every practitioner of medicine and surgery holding a license to practice in Connecticut is required by law to register with the state department of health during January and at that time to pay a fee of \$2. Licentiates who have retired from active practice or who live out of the state must register annually but need not pay a fee. A practitioner failing to register is liable to a fine of not more than \$5.

**Outbreak of Food Poisoning.**—Eighteen orderlies and one ward maid at New Haven Hospital, New Haven, were attacked October 26 with diarrhea and abdominal cramps. The illness was self limited and all were clinically well within forty-eight hours. The etiologic factor was not established. Duplicate stool specimens from each patient failed to show any recognized pathogen. The source of the outbreak was not established, although it was assumed to be of food origin because of the simultaneous outbreak, and all those involved received their meals from one source. The personnel of the serving kitchen was also studied bacteriologically, but no pathogens were isolated. No subsequent cases developed.

### DISTRICT OF COLUMBIA

**Society News.**—Dr. Garnet W. Ault addressed the Medical Society of the District of Columbia, December 16, on "Recent Advances in Proctology," and Frederick A. Fenning, counsel for the society, discussed "Court of Appeals Decisions, with Excerpts of the Evidence, in Cases Brought By and Against Washington Physicians." Dr. Samuel A. Levine, Boston, discussed "Pitfalls in the Diagnosis of Heart Disease" before the society, December 9, meeting jointly with the Washington Heart Association.—At a meeting of the Washington Ophthalmological Society, November 2, Drs. Alfred Bielschowsky, Hanover, N. H., spoke on "Etiology of Squint"; John W. Burke, "Papilloma of Canaliculus," and Leroy W. Hyde, "Hemangioma of the Orbit."

**Study of Man and Environment.**—The Academy of Medicine of Washington is planning an extended study of the medical aspects of the interaction between man and his environment. At a meeting, December 8, "The Reaction of the Individual to His Social Environment, with Special Reference to Emotions as a Factor in Disease" was presented by the committee in charge of this phase of the subject: Drs. Walter L. Treadway, assistant surgeon general in charge of mental hygiene, and Henry H. Hazen, both of the U. S. Public Health Service; Lewis C. Ecker, associate professor of medicine, Georgetown University Medical School; Earl B. McKinley, dean, George Washington University School of Medicine, and also from George Washington, Drs. Walter A. Bloedorn, professor of medicine, William J. Mallory, professor of medicine, and Vincent Du Vigneaud, Ph.D., professor of biochemistry.

## GEORGIA

**Society News.**—Dr. Stacy C. Howell, Atlanta, among others, presented a paper before the Fulton County Medical Society in Atlanta, December 3, entitled "Action of Epinephrine on the Diseased Human Eye." Drs. F. Phinzy Calhoun and Thomas F. Sellers addressed the society on "The Intra-Ocular Invasion by the Larva of the Ascaris" November 19. The speakers November 5 were Drs. Amey Chappell and Frank Lee Bivings, among others, on "Blood Studies on Negro Women During Pregnancy."

## ILLINOIS

**In Memory of Dr. Rice.**—A bronze plaque in the lobby of the Kane County Spring Brook Sanatorium, Aurora, was dedicated, December 6, to the memory of the late Dr. Imas P. Rice, superintendent, who died April 23. Dr. Rice, the first superintendent of the hospital, had held the position since March 10, 1921.

**Society News.**—Dr. Clark W. Finnerud, Chicago, addressed the DuPage County Medical Society in Naperville, November 18, on "Diagnosis and Treatment of Common Skin Diseases."—At a meeting of the Winnebago County Medical Society in Rockford, December 18, Dr. Edward L. Cornell, Chicago, spoke on "Newer Developments in Obstetrics."

**Fifty Years in Practice.**—The Adams County Medical Society held a special meeting and dinner, November 24, to honor Drs. Melinda C. K. Germann and J. W. Edward Bitter, who have completed fifty years in the practice of medicine in Quincy. Dr. J. Carl Steiner was toastmaster. Gold wrist watches were presented to both physicians. Speakers included Drs. Francis L. Reder, St. Louis, and Henry J. Jurgens, and three physicians who also have completed fifty years of practice: Drs. Levin H. A. Nickerson, Edmund B. Montgomery and William W. Williams. Dr. Germann graduated from the Quincy College of Medicine in 1886 and has been active in the civic life of the community. Dr. Bitter also graduated from the Quincy College of Medicine; he served two terms as president of the Adams County Medical Society in 1929 and 1933 and as secretary from 1922 to 1923.

## Chicago

**Rush Abolishes Fifth Year Requirement for Degree.**—The faculty of Rush Medical College recently voted to abolish the requirement of the fifth year for the degree of doctor of medicine, effective December 15. Certain additional provisions were made for students who have received the four year certificate since 1934 and who never received their degree because of illness and for students who received the certificate in the past year who were either not under contract to a hospital or whose contract could be altered by the hospital concerned to permit them to receive their degree before completing their internships.

**Society News.**—Dr. Maurice F. Lautman, Hot Springs National Park, Ark., addressed the Chicago Medical Society, December 16, on "The Present Status of the Treatment of Arthritis," and Dr. Laurence H. Mayers, "Arthritis."—At a meeting of the Chicago Pathological Society, December 14, Dr. Edward L. Compere, among others, spoke on "Pathology of the Spine."—The Chicago Pediatric Society was addressed, December 15, among others, by John Hays Bailey, Ph.D., on "Observations on the Epidemiology of Certain Streptococcal Diseases."—At a meeting of the Chicago Society of Internal Medicine, December 15, the speakers included Dr. Walter J. R. Camp on "Influence of Epinephrine on the Distribution of Potassium in the Body."

## INDIANA

**Dr. Ferree Named Chief of Health Administration.**—Dr. John W. Ferree, Bluffton, has been appointed chief of the newly created bureau of local health administration, Indiana State Division of Public Health, according to the state medical journal. Dr. Ferree, who graduated from the Indiana University School of Medicine, Indianapolis, in 1932, will supervise local health activities, help organize local departments and aid with the preparation of programs and budgets.

**Society News.**—Dr. Ernest R. Carlo, Fort Wayne, was chosen president of the Indiana Pediatric Society at its annual meeting in Fort Wayne, November 6-7. Dr. Harold D. Lynch, Evansville, was named vice president and Dr. Matthew Winters, Indianapolis, reelected secretary-treasurer.—Dr. David I. Schwartz addressed the Fort Wayne Medical Society, December 15, on "Treatment of Acute Hematogenous Osteo-

myelitis," and Dr. A. Jerome Sparks, December 1, "Management of Urinary Calculi."—Dr. Juan Rodriguez conducted an x-ray seminar before the Academy of Medicine and Surgery, Fort Wayne, December 8.—The St. Joseph County Medical Society was addressed at its fifty-first annual meeting in Mishawaka, November 18, among others, by Drs. Norman R. Kretschmar, Ann Arbor, Mich., on "Antepartum Bleeding"; John deJ. Pemberton, Rochester, Minn., "Surgery of the Thyroid Gland," and Irving S. Cutter, Chicago, "Fight Against Puerperal Fever."—Dr. Willis D. Gatch, Indianapolis, discussed "Indications for Surgery in the Acute Abdomen" before the Carroll County Medical Society in Camden in November.—At a meeting of the Fayette-Franklin County Medical Society in Connorsville, November 10, Dr. Gordon W. Batman, Indianapolis, spoke on "Early Diagnosis and Treatment of Congenital Deformities."—Dr. Byron G. Shaffer, Toledo, Ohio, addressed the Northeastern Indiana Academy of Medicine in Kendallville, November 19, on "The Surgical Aspect of Peptic Ulcer."

## KANSAS

**Society News.**—At a meeting of the Rush-Ness County Medical Society in Ransom, October 1, Dr. Clyde D. Blake, Hays, discussed "Empyema and Its Management" and Dr. Lester A. Latimer, Alexander, "Conjunctivitis, Its Management and Treatment."—The Tri-County Medical Society was addressed in Wellington, October 14, among others, by Drs. Andrew B. Rivers, Rochester, Minn., on "Treatment of Peptic Ulcer" and "The Chronic Dyspeptic"; Ferdinand C. Helwig, Kansas City, Mo., "Pitfalls in Diagnosis and Treatment in Malignant Disease," and Nathaniel G. Alcock, Iowa City, the enlarged prostate.—Dr. Leroy A. Calkins, Kansas City, Mo., discussed "Menopause Menorrhagia" before the Sedgwick County Medical Society in Wichita, December 1. Dr. Olin West, Secretary and General Manager, American Medical Association, addressed a joint meeting of the society and its woman's auxiliary, December 15.

## MASSACHUSETTS

**Mental Hygiene Officers.**—At the annual meeting of the Massachusetts Society for Mental Hygiene in Boston, November 24, Dr. Donald Gregg, Wellesley, was elected president; Walter F. Dearborn, Ph.D., Cambridge, vice president, and Dr. Charles E. Thompson, Gardner, secretary.

**Anesthetists Oppose Hospital Prepayment Plan.**—At a special meeting, November 6, the Boston Society of Anesthetists passed a resolution opposing a proposed hospital prepayment plan as it is now drawn up for consideration by Boston hospitals. The resolution declared that the present contract would tend to reduce anesthetists toward the position of technicians, place them under the control of the hospitals and set them apart from other branches of medicine. It further declared that the progress of anesthesia would be impaired and that poorer service to the patient would ultimately be the result. The resolution was passed after a series of conferences with anesthetists from New York, Rochester, Washington and other places held during the Congress of Anesthetists in Philadelphia during October.

## MICHIGAN

**Medical Director of Psychopathic Hospital.**—Dr. Raymond W. Waggoner, associate professor of neurology, University of Michigan School of Medicine, Ann Arbor, has been appointed medical director of the state psychopathic hospital to succeed the late Dr. Albert M. Barrett, who held the position for thirty years. Dr. Waggoner, who is 35 years of age, is an alumnus of the university medical school.

**Society News.**—Dr. Robert S. Breakey, Lansing, addressed the Shiawassee County Medical Society, October 15, on renal calculi.—Samuel Lewis, D.D.S., addressed the Detroit Pediatric Society, December 2, on "Indications and Contraindications for Orthodontic Treatment in Children."—Dr. Edward Cathcart, Detroit, addressed the Oakland County Medical Society in Pontiac, November 17, on "The Association of Renal Neoplasms with Calculi."—At a joint meeting of the Muskegon and Kent county medical societies in Grand Rapids, November 18, Dr. Russell M. Wilder, Rochester, Minn., spoke on "Clinical Investigation of the Action of Protamine Insulin."—Ernest O. Melby, Ph.D., dean, school of education, Northwestern University, Evanston, Ill., discussed "Recent Trends in Education" before the Calhoun County Medical Society in Battle Creek, December 1.—Dr. Harold G. Pudleiner, Battle Creek, addressed the Saginaw County Medical Society, November 17, on hydronephrosis.

## MINNESOTA

**Annual Registration Due During January.**—Every practitioner of medicine and surgery holding a license to practice in Minnesota is required by law to register annually during January, with the secretary of the board of medical examiners, and at that time to pay a fee of \$2. A licentiate who practices without renewing his license is guilty of a misdemeanor and is liable to prosecution.

**The Bell Lecture.**—Dr. Harry E. Kleinschmidt, director of health education service, National Tuberculosis Association, New York, delivered the third annual J. W. Bell Lecture of the Hennepin County Medical Society, December 7. His subject was "The Doctor and Tuberculosis of the Future." The lectureship was established as a memorial to the late Dr. John W. Bell and each year serves as a tribute to him and to one other outstanding physician. This year the lecture commemorated Dr. Frederick A. Erb, who died October 25 while president of the Hennepin County Tuberculosis Association.

**Society News.**—Dr. Martin Nordland, Minneapolis, discussed surgical lesions of the neck before the Kandiyohi-Swift-Meeker Medical Society at Willmar, October 27.—At a meeting of the Rice County Medical Society in Faribault, October 1, Dr. Alfred W. Adson, Rochester, spoke on "Diagnosis and Surgical Treatment of Spinal Cord Tumors."—At a meeting of the Upper Mississippi Medical Society in Bemidji, October 31, among others, Dr. Oscar E. Locken, Crookston, read a paper entitled "Will the Government or the Patient Pay?" and Dr. L. Strausman, Rochester, "State Medicine as Seen in Germany."—Dr. David E. McBroom, Cambridge, was chosen president of the Minnesota Medical Officers' Association at its annual meeting, October 5; Dr. Ethel R. Beede, Faribault, vice president, and Dr. Herman E. Hilleboe, St. Paul, secretary; Dr. Arthur R. T. Wylie, Faribault, discussed feeblemindedness.

**Delegates Reaffirm Free Choice of Physician.**—Following a special meeting of the house of delegates of the Minnesota State Medical Association, November 1, the committee on public policy and legislation issued a statement to the interim committee on social security legislation of the Minnesota state legislature defining the position of the association on the medical aspects of relief. The statement reaffirmed the association's belief in the principle of free choice of physician by the recipient of relief or his guardian and preservation of the traditional physician-patient relationship. "We also believe," the statement said, "that where local private hospital facilities are available, adequate and practicable, the recipient of relief or his guardian should have the choice of hospital." Strong opposition was expressed to the practice of "bidding" for the rendering of medical services. This kind of service is not conducive to the best interests of the patient, the taxpayer or the medical profession, and free choice of physician with a reasonable allowance to the physician for his services will eliminate it, the delegates believe. The statement expressed the association's opinion that each case should be considered on its merits. It was the opinion of the spokesmen that the allowance for medical services to recipients of relief should be paid directly to the physician. They assured the interim committee that the association as a body is willing to administer to those who are unable to provide medical attention for themselves and that it wishes to cooperate with the legislature in the future as in the past. It is willing to continue the plan of medical advisory committees selected by the county medical societies to assist local relief authorities in medical matters, believing that this plan has functioned satisfactorily. The statement also recorded approval of the present forms of authorization for medical service.

## MISSOURI

**Memorial Meeting.**—The Jackson County Medical Society, Kansas City, held a memorial meeting in honor of the late Dr. Emsley T. Johnson, December 8. Dr. Johnson was the president-elect of the society. He died suddenly of a cerebral hemorrhage, November 20.

**State Prison Quarantined for Smallpox.**—Newspapers reported November 27 that the Missouri state prison at Jefferson City had been under quarantine since October 15 on account of an outbreak of smallpox. Up to November 27 seven cases had been reported. There are about 4,800 inmates in the prison.

**Society News.**—The St. Louis Medical Society was addressed, December 9, by Drs. Cyril M. MacBryde on "Insulin Response as an Index to the Dietary Management of Diabetes"; Duff S. Allen, "Effect of Goiter and Thyroidectomy in the Aged," and August A. Werner, "Relationship of Thyrotropic Hormone to Exophthalmic and Toxic Adenomatous

Goiter."—Dr. Richard L. Sutton Jr., Kansas City, addressed the Jasper County Medical Society at Joplin, November 17, on "Common Diseases of the Skin."—At a meeting of the Kansas City Dental Society, December 14, Dr. Russell L. Haden, Cleveland, presented "Reflections on the Focal Infection Problem."—Dr. Austin A. Hayden, Chicago, secretary, Board of Trustees, showed a motion picture film of the activities of the American Medical Association before the Jackson County Medical Society, December 15.—Dr. Ulysses S. Short discussed "Allergy and Its Nasal Manifestations" at a joint meeting of the St. Louis County Medical Society and its woman's auxiliary, November 24.

## NEW YORK

**Hospital Insurance for Western New York.**—The Hospital Service Corporation of Western New York will go into operation Jan. 1, 1937, with headquarters in Buffalo. Carl M. Metzger is the executive director. The plan, which offers twenty-one days of hospital care, exclusive of physicians' fees, has been approved by the Medical Society of the County of Erie. The charter provides for service for Erie, Niagara and Chautauqua counties. Eight hospitals in Buffalo, one in Lackawanna and two in Niagara Falls are participating, each represented on the board of directors. The medical societies concerned are also represented on the board.

## New York City

**Birth Control Conference.**—A Conference on Contraceptive Research and Clinical Practice will be held at the Hotel Roosevelt December 29-30 under the auspices of the Birth Control Clinical Research Bureau. Tuesday's program will be devoted to "Present Day Research in Conception" and Wednesday's to "Clinical Practice." Tuesday evening there will be a dinner meeting at which Dr. Ira S. Wile will be toastmaster and the speakers will be Drs. Hannah M. Stone; Milton C. Winternitz, New Haven; Mrs. Margaret Sanger, and Morris L. Ernst. The subject to be discussed is "Public Health and Birth Control Laws."

**Personal.**—A portrait of Mary Swartz Rose, Ph.D., professor of nutrition, Teachers College, Columbia University, was recently presented to the college by former students and associates. Dr. Rose is a member of the Council on Foods of the American Medical Association.—Dr. Thomas H. Russell has succeeded Dr. Charles Gordon Heyd, President of the American Medical Association, as executive officer of the department of surgery at New York Post-Graduate Medical School and director of the surgical service at New York Post-Graduate Hospital and Dispensary. Dr. Russell was also promoted to the rank of professor of surgery. Dr. Heyd retains his title of professor of clinical surgery.—Dr. Fred H. Albee presented a paper on "Arthroplasty of the Knee" at the meeting of the International Society of Orthopedic Surgery and Traumatology in Bologna and Rome recently and was elected vice president of the organization.—Dr. William Bierman, assistant clinical professor of therapeutics at New York University College of Medicine, was recently appointed administrative consultant in physical therapy to the department of hospitals.

**Society News.**—Dr. Morris Fishbein, Chicago, editor of THE JOURNAL, among others, addressed the Medical Society of the County of Kings, December 15, on "New Forms of Medical Practice."—Drs. Frederick T. Lord, Boston, and Frederic Maurice McPhedran, Philadelphia, addressed the Brooklyn Thoracic Society, December 18, on "Diagnosis of Pulmonary Tuberculosis" and "Pathology of Tuberculosis in Relation to Its Clinical Course" respectively.—Dr. Walter Schiller, Vienna, Austria, addressed the New York Pathological Society, December 17, on "Mesonephroma Ovarii."—The eighth clinical session on pulmonary diseases under the auspices of the Tuberculosis Sanatorium Conference of Metropolitan New York was held at Cornell University Medical College, December 2.—A section on medical history was recently organized in the Medical Society of the County of Kings and held its first meeting November 13, with Dr. Thomas Darlington as the speaker on "Medical Practice in Arizona in the Late Eighties."—Dr. Joseph Wrana gave an afternoon lecture before the Medical Society of the County of Queens, November 6, on "Common Diseases of the Cervix," and Dr. Moses Cohen spoke, November 20, on "Complications During Pregnancy and Their Management."

## NORTH DAKOTA

**Society News.**—The Rolette County Medical Society was recently organized at a meeting in Rolla, with Dr. Joseph O. Hayhurst, Rolette, as president; Dr. Bernard D. Verret, Rolla, vice president, and Dr. Milton Greengard, Rolla, secretary.—

The fall meeting of the North Dakota Academy of Ophthalmology and Otolaryngology was held at Fargo, October 31; the speakers were Dr. Trygve Oftedal, Fargo, on "Tuberculin in Ophthalmology"; Clarence Wulling, Minneapolis, "Practical Optics," and Dr. George C. Foster, Fargo, "Osteomyelitis of the Facial Bones and Skull."

### OHIO

**Bacteriologists Organize.**—An Association of Bacteriologists in Ohio was organized at a meeting in Columbus December 5, with the following officers: Dr. Noel Paul Hudson, professor of bacteriology, Ohio State University College of Medicine, Columbus, chairman; Dr. Merlin L. Cooper, assistant professor of pediatrics, University of Cincinnati College of Medicine, Cincinnati, vice chairman, and William A. Starin, Ph.D., professor of bacteriology at Ohio State, Columbus, secretary. A dinner meeting was addressed by Dr. Charles A. Doan, professor of medicine and medical research at Ohio State, on "The Place of Bacteriology in Modern Medical Science."

### PENNSYLVANIA

**Personal.**—Dr. Thomas I. Cottom, Selinsgrove, has been appointed superintendent of the State Colony for Epileptics, Selinsgrove, to succeed Dr. Chester A. Marsh.—Dr. William M. Guilford, Lebanon, celebrated his one hundred and fourth birthday November 26.

**Annual Registration Due January 1.**—Every practitioner of medicine and surgery holding a license to practice in Pennsylvania is required by law to register annually, on or before January 1, with the board of medical education and licensure in the department of public instruction, and to pay a fee of \$1 or such fee as may be fixed by the department of public instruction. A practitioner who fails to register and who continues to practice is liable to a fine of from \$10 to \$100.

#### Philadelphia

**Society News.**—At a meeting of the Pennsylvania Physical Therapy Association, December 10, the speakers were Drs. Albert A. Martucci, on "Experimental and Clinical Observations in Cerebral Diathermy"; Frank Follweiler, Jenkintown, Pa., "The Value of Physical Therapy in Nose, Throat and Ear Conditions," and Thomas Leichner, "Value of Short Wave Diathermy in the Treatment of Sinusitis."—A symposium on the endocrine glands was presented at a meeting of the Philadelphia County Medical Society, December 9, by Drs. Eugene M. K. Geiling, Chicago; Leonard G. Rowntree, Philadelphia, and Emil Novak, Baltimore.—Dr. Leroy U. Gardner, Saranac Lake, New York, addressed the Pathological Society of Philadelphia, December 10, on "Silicosis and Related Conditions."—Among others, Drs. Ernest A. Spiegel and Charles M. M. Gruber addressed the Physiological Society of Philadelphia, November 16, on "Subcortical Activities" and "The Cardiac Action of Thiobarbiturates" respectively.—A symposium on diseases of the respiratory tract was presented before the North End Medical Society and the North Branch of the Philadelphia County Medical Society, November 19, by Drs. George M. Coates and Hobart A. Reimann.

#### Pittsburgh

**Personal.**—Dr. Camilla M. Anderson, Pittsburgh, has been appointed secretary of the Pennsylvania Mental Hygiene Committee of the Public Charities Association to succeed Dr. Leroy M. A. Maeder, Philadelphia.

**New Health Director Appointed.**—Dr. I. Hope Alexander has been appointed health director of Pittsburgh, according to the *Pittsburgh Medical Bulletin*, succeeding Dr. Ray P. Moyer. Dr. Alexander was graduated from the University of Pennsylvania Department of Medicine in 1906. He is chief of the medical staff of Passavant Hospital and professor of physical diagnosis in the school of dentistry of the University of Pittsburgh. During the World War he served as chief medical officer of a government hospital in North Carolina. In 1931 he was president of the Allegheny County Medical Society. For the last three years he has been president of the Pittsburgh chapter of the Izaak Walton League of America.

### TEXAS

**Annual Registration Due January 1.**—Every practitioner of medicine and surgery holding a license to practice in Texas is required by law to register annually on or before January 1, with the state board of medical examiners, and at that time to pay a fee of \$2. If a practitioner fails to renew his registration within sixty days after January 1, his license is suspended.

**Endowment for State Medical Library.**—The *Texas State Medical Journal* announces that Dr. Samuel E. Thompson, Kerrville, has designated the library of the State Medical Association of Texas in his will to receive a bequest of about \$50,000. The fund will bear the name of the giver and the principal will remain intact, the interest to be expended by the trustees to develop the library. Dr. Thompson is 65 years old, a graduate of the Kentucky School of Medicine, class of 1904. He is medical director and superintendent of the Thompson Sanatorium for tuberculosis, Kerrville, established in 1917.

### VIRGINIA

**Field Clinician Appointed.**—Dr. Jay M. Arena, associate in pediatrics at Duke University School of Medicine, Durham, N. C., has been appointed field clinician to conduct graduate courses in pediatrics under the auspices of the department of clinical and medical education of the Medical Society of Virginia. Dr. Arena conducted a graduate course for physicians in Nelson and Orange counties, with lectures and clinics at Livingston and Orange.

**Society News.**—At the meeting of the Fourth District Medical Society in Hopewell, November 10, Dr. William M. Bickers, Richmond, was the guest speaker, on "Treatment of Sterility in the Female." Other speakers on the program, all of Petersburg, were Drs. Charles S. Dodd on "Ludwig's Angina"; William B. McIlwaine III, "Lung Abscess in Children"; George H. Reese, "Significance of Abdominal Pain"; Herbert C. Jones, "Urinary Infections," and Hyman Cantor, "Treatment of Compound Fractures."—Dr. Gregory Zilboorg, New York, addressed the Richmond Academy of Medicine, November 10, on "The Organic versus the Mental in Psychiatry."

### WEST VIRGINIA

**Headquarters Remodeled.**—The headquarters of the West Virginia State Medical Association in the public library of Charleston have been remodeled. A private entrance has been cut and a new lighting system installed. The association's library and reception room have been redecorated and refurnished in modern style. The library contains about 1,200 volumes and has on file about seventy-five American and European medical journals.

### PHILIPPINE ISLANDS

**Plan to Improve Diet of Filipinos.**—The Philippine Council of Hygiene recently appointed a committee to gather information necessary for the formulation of concrete plans for improving the diet of the Filipinos, according to the *Journal of the Philippine Islands Medical Association*. Special attention will be directed to the diet of the army and to methods of producing cheap foods. Members of the committee are Manuel Roxas, LL.B., representing the National Research Council of the Philippine Islands; Drs. Isabelo Concepcion, representing the College of Medicine, University of the Philippines; Hilario Lara, representing the Council of Hygiene, and Attorney Lara.

### GENERAL

**Bequests and Donations.**—The following bequests and donations have recently been announced:

New York Medical College and Flower Hospital, \$50,000 by the will of the late Elias C. Benedict; \$5,000 by the will of the late George Leask. Hospital for Joint Diseases, New York, \$3,942 by the will of the late Charles L. Hoffmann.

Richmond Memorial Hospital, Princes Bay, Staten Island, N. Y., \$35,325, and Staten Island Hospital, Tompkinsville, N. Y., \$20,000 by the will of the late Frederick Keteltes.

Montefiore and Mount Sinai hospitals, New York, \$8,115 each by the will of the late Henry Ollesheimer; \$2,500 each by the will of Jacob W. Gutman.

**News of Epidemics.**—About fifty cases of smallpox were reported in Dansville, N. Y., December 9. It was said that Hornell, eighteen miles from Dansville, had seven cases.—Eight cases of typhoid were reported in Swains, N. Y., a village of 100 inhabitants with no physician, newspapers reported December 8.—Schools were to open in Tulsa, Okla., November 30, after a month's vacation because of infantile paralysis; seventy-six cases had occurred in Tulsa County up to November 20, sixty-four of them in the city.—An outbreak of scarlet fever was reported at a state penal farm at Vandalia, Ill., November 18.—Scarlet fever appeared in fourteen public schools and one private school in Dallas, Texas, with thirty-nine cases in the first three weeks of November.—Thirteen recent cases of typhoid in Cecil, Washington County, Pa., were traced to contaminated water.—Newspapers reported thirty cases of diphtheria in an epidemic at Lost Creek, Harrison County, W. Va., November 19.

## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Nov. 14, 1936.

#### Medical Coroners

At present the majority of coroners are lawyers but a minority are physicians. A committee appointed by the government to inquire into the law and practice of coroners' inquests made a report (*THE JOURNAL*, March 21, p. 1018) recommending that in future only lawyers should be appointed to the office of coroner, as the sifting of evidence requires legal training and a coroner without medical knowledge would be fully informed of the medical aspects of the case by the medical witnesses. The *British Medical Journal* objected to this recommendation. It admitted the desirability of the coroner having legal knowledge but thought it almost essential that he should also have medical knowledge. It pointed out that a large number of persons qualified for both professions. It has been the practice of the London County Council since 1919 to require from candidates for the position of coroner both legal and medical qualifications, but because of the recommendation of the government committee it proposes to discontinue the requirements of a dual qualification and to appoint only a lawyer. A deputation of the British Medical Association therefore submitted to the council a memorandum against this change. It pointed out that the coroners' act of 1926 enacted that no person could be appointed coroner who was not a lawyer or physician and that undoubtedly the representations of the association received due consideration when this law was passed. Since that time the association has urged the desirability of the dual qualification when practicable. All the London coroners except one hold the dual qualification and so do many of the coroners of the larger districts outside London, where they are of sufficient size to justify an appropriate salary. There has been no attack on doubly qualified coroners as such. Indeed, the inquests that attracted notoriety in the press and gave rise to the appointment of the government committee were conducted by coroners holding only legal qualifications. The report recommends that a "coroner should have training in forensic medicine." This is a cogent reason for appointing doubly qualified men. The association "cannot conceive how the possession of two qualifications—law and medicine—could be considered less desirable than one qualification—law—with only a smattering of forensic medicine." There is at present no dearth of doubly qualified suitable men for any appointment that may become vacant.

The importance of legal knowledge by the coroner has been reduced by recent legislation. Since 1927 he has been required to adjourn his inquiry after hearing the medical evidence when any person has been charged with murder, manslaughter or infanticide. Moreover, the committee recommended that his investigation of fact should be clearly distinguished from any trial or liability, whether civil or criminal. On the other hand, the medical aspect of the coroner's work is becoming more important. In London in 1934, 9,713 cases were reported to the coroner either through the police or through the physician who felt that he was not justified in taking the responsibility of issuing a death certificate, or by the registrar of deaths who did not feel justified in passing a certificate for registration. These cases are divided into those in which a coroner is compelled to hold an inquest and those in which, after a necropsy and inquiry, he can exercise discretion and on his own responsibility issue a certificate without an inquest. In London in 1934, 52 per cent. of the cases referred to all the coroners were dealt with without an inquest and as a result of a necropsy. Altogether in 1934 there were 6,248 necropsies. How does

a legal coroner read a report of a necropsy? However much he may have read textbooks he will never do so with the seeing eye of the physician.

#### Street Washing for Removing Poison Gas

This country, which once could rely for its safety on sea power, is now actively engaged in measures for defense against attack from the air, a possibility that cannot be ignored in the present disturbed international relations in Europe. The latest precaution is shown by a demonstration at Watford of the new Scammel street washer, which is effectual not only in fighting fires but in freeing the streets from poison gas after air raids. Out of the old fashioned watering cart has been evolved this highly efficient machine. It can spray water over a width of 90 feet and is capable of sending an arc of spray to reach the roof of a two story house. Streets where poison gas was present after an air raid would first be washed in this way and then under low pressure. At the same time the squeegees with which the washer is equipped would be brought into use for cleaning and to some extent for drying the road surface. The third stage of the decontamination of the streets would be to flush chemicals through the gullies. This would normally be done by connecting the nearest hydrant, but where the water main had been broken in an air raid the machine could do the work with its own power.

To aid the dispersal of nonpersistent gases the machine has a special piece of equipment in the shape of four "fishtails," which can take the place of the ordinary washing jets and which are mounted on ball joints to give freer movement. When these are set in motion they produce a fan-shaped sheet of water, which completely encircles the vehicle to a height of 30 feet and a width of 70 feet. Such a device makes it possible to purify the air and to wash the roofs of buildings and the sides of vehicles that have been contaminated.

#### An Earlier "British Medical Journal"?

It is generally supposed that the title "British Medical Journal" was first used in 1857 for a journal previously in existence for seventeen years which bore the name first of *Provincial Medical and Surgical Journal* and then of the *Association Medical Journal*. But *nil novum sub sole*. Our contemporary has discovered that the title "British Medical Journal" was announced for a new periodical at the end of the eighteenth century, though whether it ever appeared seems more than doubtful. A printed prospectus in the form of a four page leaflet was issued in London in 1798 and begins thus: "On the 1st of February, 1799, will be published, price two shillings, elegantly printed on fine Demy Paper, octavo size, containing at least six sheets of letterpress and embellished with one or two plates, to be continued monthly, Number 1 of a New, Useful and interesting Periodical Work, intitled the *British Medical Journal*; containing the Earliest Information on Subjects of Medicine, Surgery, Chemistry, Pharmacy, Botany and Natural History." The prospectus is lengthy and gives under ten headings everything that a medical journal could be expected to do—recent improvement and discovery in botany, chemistry, pharmacy and other medical sciences, an abridged view of the prevailing epidemics, "impartial histories of the most celebrated patent and other quack medicines," remarkable and authentic medical cases, descriptions of countries and places as to their salubrity, a review of all new publications in the various departments of medical science, and monthly tables of the variations in the wholesale price of drugs. One reads: "There is at present no monthly journal in the English language the professed and single design of which is to communicate accounts of every new observation and valuable discovery made from time to time in the different branches of medicine. An early circulation of intelligence so essential to the practitioner, as well as to society in general, has not been

attended to with the care which the importance of the object required." Though written nearly 150 years ago, when medical science was so different, this prospectus has a familiar ring. It reminds us of the lofty aims and the wants that have never been filled before, or at least so well filled as they will be, by some new journal about to be or just launched. The subsequent failure to realize high hopes is also not without more recent parallels. But we have advanced in one way. Such prolixity would not be possible in an editorial announcement today, though the same could not be said of the ordinary medical article.

### The Training of Factory Nurses

The increased attention to industrial welfare has led to the appointing of physicians and nurses to factories. But it is not every factory that can afford to employ both, and a nurse who works alone has considerable responsibility. Her work consists not only in the treatment of accidents and minor injuries but in advice as to health. In the case of processes involving special risk or strain she may have to carry out special treatment under medical supervision. She therefore requires special training. For the past two years the College of Nursing has provided special courses of instruction for nurses who undertake factory work.

### PARIS

(From Our Regular Correspondent)

Nov. 21, 1936.

### The Surgical Congress

In THE JOURNAL, November 14, page 1647, the reports read at this year's French Surgical Congress were referred to. In addition to the participants previously cited, the subject of ovarian grafts was discussed by other speakers. Mayer of Brussels disagreed with the reporters in saying that intramuscular grafts were not successful in female dogs. His own experiments showed that such was not the case and that if the grafts did not survive it was due to a faulty technic. He prefers instead of placing the graft clinically in the abdomen to insert it into either the rectus (abdominal) muscles or the subcutaneous or retromammary connective tissue. In cases in which the uterus had been conserved, the ovarian grafts were successful in 88 per cent of the cases. Menstruation recurred regularly for several years. In supravaginal hysterectomy cases he could cite only 50 per cent successes.

Desmarest of Paris emphasized the necessity of conservation of the tubes and ovaries in cases of hysterectomy for fibroids. Eighty per cent of his patients had no disturbances following such a procedure. The estrogen content of the urine in such patients is equal to that of women having normal menstruation. This is also true of the estrogen content of the blood. In uterine fibroids, if myomectomy is impossible, only a supravaginal hysterectomy with conservation of the tubes and ovaries is indicated.

The discussion on the subject of pneumonectomy was continued by Rist of Paris, who stated that the present tendency of regarding bronchiectasis as a benign disturbance is too prevalent. Bronchiectasis always ends fatally, after a prolonged clinical course. If, however, bronchiectasis is treated during an early period of its development, a thoracoplasty, with in some cases also a phrenicectomy, can be of great benefit.

Among other papers read was one on foreign bodies in the esophagus, by Jean Guisez of Paris, who has observed 530 cases. The most frequent foreign bodies (200 cases) that lodge in the upper portion of the esophagus are small bones (especially those of fishes). In seventy-two patients a set of false teeth had been swallowed, and next in frequency were buttons, open safety pins and coins in infants. He had removed, with the aid of esophagoscopy, an open safety pin from a 6 weeks old child. The most reliable clinical symptom of foreign bodies

in the esophagus is complete inability to swallow either liquids or solids. At times there is a complete absence of any clinical signs in children who have swallowed metallic bodies, because these are well tolerated. This is not true of small bones, the lodgment of which is apt to be followed by septic complications either in or outside the esophagus. Endoscopy has greatly facilitated the removal of foreign bodies in the esophagus. His mortality in 530 cases was only 2 per cent, and he was unable to deliver the foreign body in only 1 per cent. In the last 220 cases he had only one death and no failures of extraction. The death occurred in an adult whose false teeth had lodged so firmly in the upper part of the esophagus that several attempts had been unsuccessful before the patient was seen by Guisez.

Ferey of Saint Malo (France) reported eighty-two cesarean operations performed during the past six years. Of these, seventy-six were of the low type, one of the high and five a section followed by hysterectomy. He has performed the low cesarean operation in eighty-eight cases without a death and believes that this technic has innumerable advantages over the high operation.

Judet of Paris has been obliged to operate only once in 300 cases of supracondyloid fractures of the humerus in children. If the reduction can be made under fluoroscopic control within a few hours after the accident, complete approximation of fragments is always possible. The elbow should never be placed in extreme flexion because of the danger of interference with the blood supply (brachial artery) and resultant Volkmann contracture. Operation is indicated only if nerve or vascular complications exist.

### Familial Intolerance of Mercury by the Kidneys

At the June 19 meeting of the Société médicale des hôpitaux, Tzanck and associates reported two cases in the same family of intolerance of mercury by the kidneys. A man, aged 44, received injections of mercuric oxycyanide for hereditary syphilis. Two hours after the first injection, the previously existing headache became more severe and the next day an edema involving both lower extremities and a very marked albuminuria appeared. Following a second injection the patient became comatose. The injections were discontinued and all symptoms disappeared in a few days. Since then a bismuth treatment has been given without any further signs of renal intolerance. The daughter of the patient showed evidences of hereditary syphilis. Following a series of mercury inunctions when she was 5 months old, a hematuria appeared. This recurred when an ointment containing yellow mercuric oxide was given at the age of 4 years. Thus there were two members of the same family who manifested a renal intolerance to mercury.

### Experimental Syndrome Resembling Obliterating Thrombngitis

At the July 1 meeting of the Académie de chirurgie, Leriche and Froehlich described experiments on rabbits, like those of Maggi and Mazzochi, reported in 1933, in which lesions like those observed in obliterating thrombngitis were observed after transplantations of fragments of the adrenal. This was done every four days by Leriche and Froehlich. In the controls, in which testicular and ovarian grafts were used, the veins and arteries remained intact. In all the rabbits in which fragments of the adrenal were transplanted, both arterial and venous lesions appeared which resembled greatly those seen in human beings. The lesions were slight when only six to ten grafts were used but very marked when twenty or more were employed. The chief changes observed were considerable narrowing of the arterial lumen, general contraction of the vessel, proliferation of the endothelium, which is very thick in places, with increase in the elastic fibers, the latter two changes forming marked salients into the lumen. At this point, a thrombus

formed, and one could see a sclerotic tissue replacing the muscular fibers. In certain veins the same changes excepting the thrombus formation were visible. In a rabbit that had received thirty-nine grafts and been kept under observation for a little over six months, the femoral artery was found to be completely occluded and a persistent ulcer appeared on one of the paws. Fontaine had previously noted similar thromboses of veins and arteries following daily injections of cholesterol over a period of six months. If one recalls that the medullary portion of the adrenal plays a fundamental part in the metabolism of the cholesterol, it seems probable that thrombangitis with arterial and venous lesions is the clinical expression of an adrenal disease. This agrees with the results obtained by Leriche by removal of the adrenal or division of the splanchnics, which partially denervates the adrenal.

### The Organization of Health Centers

The medical profession, through its Federation of Medical Syndicates or Unions, has proposed to the secretary of public health to take charge of his plan of organizing health centers all over France. The object of the federation is to keep this feature of social medicine in the hands of the practitioner instead of permitting it to be administered by officials of the department of public health. There has, of course, arisen some opposition within the ranks of the profession, but this has been overcome, since it is evident that, unless the present socialist government is given cooperation in its program, the alternative will be state medicine and the disappearance of private practice.

In the October 4 *Concours médical* appeared an impartial discussion by Dr. Fischer of such cooperation, stating that, considering the rapidity of social revolutions, this offer of cooperation is the only way of safeguarding traditional medicine and conciliating its needs with the requirements of hygiene and prophylaxis that those who wish to socialize medicine demand to protect the public.

The manner in which social insurance was forced on the profession has compelled physicians, especially the younger ones, to adapt themselves to new conditions which were formerly rejected. Fischer believes that the assumption of the task of preventive medicine should be carefully worked out lest failure to carry it out properly be followed by worse conditions than exist at present. The medical profession, having had its experience with the manner in which many promises were not kept by the social insurance authorities, should present a united front on the present question of cooperation in preventive medicine.

The plan is not to be tried out in large communities like Paris, which present complicated problems, but in a smaller department or county to begin with. The majority of the work can be carried out in the offices of practitioners. It is to be only of a diagnostic nature, so that the patient can still choose the physician he wishes to carry out the treatment. A committee of coordination composed of physicians and public officials ought to meet every three months to supervise the work. In larger communities it is planned to have diagnostic centers fully equipped with all modern diagnostic resources. This plan of cooperation is soon to be submitted to the secretary of public health.

### Protest Against Foreign Physicians in France

A want ad for a position as medical inspector in the social insurance organization recently appeared in the *Concours médical* and there were eight applicants for the position. In an editorial appearing in the September 19 issue of the journal the writer, Dr. J. Noir, asks whether this relatively large number of applicants for such a position does not signify that many middle-aged physicians are seeking a haven in which they would no longer have any worries regarding their income. The advertisement stated that only those need apply who had been

in practice at least ten years. This would exclude as applicants recent graduates who had not yet built up a practice. The rôle of foreign-born physicians practicing in France, as revealed by Dr. Queyrriou at a meeting of the syndicate of physicians in the northern suburbs of Paris, is quoted in the editorial. More than one fourth of the practitioners in Paris and its suburbs are non-naturalized foreigners. This percentage was only 8 in 1911 and 10 in 1931. Fifteen per cent of the physicians in all France were foreigners in 1935. At the Faculté de médecine, the largest medical school in France, there were 1,530 foreigners out of a total of 3,332 students; 689 of the 1,530 foreign students were preparing to pass the examinations for licenses to practice in France and the remainder wished only to have an honorary "diplôme d'état," which does not entitle them to practice in France or its colonies unless they pass additional examinations, which some of them will probably try to do. During the first six months of 1936, 163 foreign physicians registered their state licenses in Paris, as compared with 124 of French birth. The present socialist prime minister is quoted as having stated that about a thousand physicians who have sought refuge in France will be granted permission to practice here. An effort is being made by the various medical syndicates (associations to protect the interests of the profession) to insist on the enforcement of a law which will prevent any foreign-born physician practicing in France and its colonies during a period of ten years after naturalization. Noir regards the invasion of the profession by foreign physicians as the most important factor in the present medical crisis here.

### University Diploma Falsely Registered

There is quite a sharp distinction in France between a university diploma of a medical school and the state diploma, which alone confers the right to practice. Following the passage of the new license laws in 1933, every diploma was verified by representatives of the government and of the medical profession.

A foreigner, who had passed only the examinations required in order to obtain a university diploma, had succeeded in having it registered by the police department (where all diplomas must be registered) as a state diploma, conferring the right to practice. Many foreigners, especially since the World War, have entered medical schools in France and followed the courses leading to the university diploma. The latter is often of considerable value in the foreigner's native country in obtaining the state license. At one time there were a number of North and South American and European medical students who had not been eligible to admission to schools at home and expected their studies in French universities to serve as credits toward obtaining a state license at home. This practice has been entirely abandoned in most European countries, with the result that the number of candidates for a university diploma has greatly diminished here.

The possessor of the university diploma, in the case cited, refused to discontinue practice, on the ground that his diploma had been duly registered, although the registration had been done by a clerk who did not realize the difference between a university and a state diploma. To obtain the state diploma, the student not only must pass all the examinations at the respective medical school, as is required also of the candidate for a university diploma, but must have received the bachelor of arts degree from a French university. The latter requirement has been the chief stumbling block in the past for American physicians who wished to practice here. According to the present laws (since 1933) only those foreigners who were practicing in France and had a state license could continue to do so.

The government authorities have just decided that the physician who had only a university diploma and had it registered as a state diploma was not entitled to practice here. This decision will put an end to any attempts by foreigners, who

have flocked to France in large numbers recently, to utilize their university diplomas, which are of purely honorary character, to remain here.

#### Plea for a Single Medical Diploma

As explained previously, a medical student in France can elect to graduate with a university diploma (*diplôme universitaire*), a purely honorary one, which does not entitle its holder to practice in France or its colonies, or to graduate with a state diploma (*diplôme d'état*), which carries with it the right to practice without the obligation to pass any other examinations than those given by the faculty of the medical school. The only difference between these two forms of diplomas in France is that the candidate for a state diploma must have received a bachelor of arts degree from a French university. Those granted by universities of other countries are not considered valid here. Many protests are being made against this dual system and sooner or later it will be discarded in favor of a single diploma to be followed by a state board examination for all candidates, as now exists in the United States, Germany and other countries. A writer in the *Revue moderne de médecine et chirurgie*, Dr. P. Gallois, makes a strong plea for the granting of only one type of diploma and a subsequent state board examination. Such a licensing board should have full power to refuse permission to practice to those who are not French citizens, possess a bachelor of arts degree, have had three years' military service and have been naturalized a minimum of ten years. Only in this way can the overcrowding of the profession here by foreigners during recent years be checked. This would put a stop to the present method so often employed by foreigners of changing a university to a state diploma by simply passing the examinations for the bachelor of arts degree at a later date.

#### "Mock" Night Attack of Enemy Bombers

For the first time since the World War, Paris extinguished its myriad lights and shrouded itself in darkness, October 16, in defense against an air attack. While supposed enemy bombing planes circled over the obscured city, dropping flares representing destructive explosives and poisonous gases, fire engines sped through the dark streets to combat "fires," and ambulances rushed the "gassed and injured" to first aid stations. All traffic was halted, and automobiles and other conveyances remained motionless while the hypothetical attack was in progress. Notice of the impending attack was given by the screeching of seventy sirens. The center of the sham air raid was in the Latin quarter. Red Cross nurses and stretcher bearers protected by gas masks picked up the wounded and transported them to hospitals, while disinfecting squads purified the air. Observation planes passed overhead to measure the extent to which the city had become invisible. Experts declared that the actual tests worked out with minute precision, and relief squads operated efficiently throughout the city.

#### Transfusion of Refrigerated Citrated Blood

Reference has already been made in these letters to the success in using blood for transfusion which has been placed in a refrigerator, following dilution with sodium citrate. Professor Jeanneney of Bordeaux was the first to suggest this method of conserving blood, which has been extensively employed in southwestern France and in Russia. In the latter country, Bagdassaroff of Moscow has employed this method 2,400 times, and Filatoff and Bopp of Petrograd 1,200 times.

Tullien-Neroz, a pupil of Jeanneney, in a thesis submitted for graduation in 1935, called attention to the manifold advantages of the conserved blood method. The practitioner has at his disposal ready for use blood that has been strictly controlled in advance as to grouping and the presence of such diseases as syphilis and malaria in the donor. Such blood is

also immediately available for the purpose of immunotransfusion. The blood as soon as received from the donor is mixed in a 250 cc. flask containing 20 cc. of a 5 per cent solution of sodium citrate. A tag on the flask indicates the name of the donor, the group and the date on which the blood was taken. The flask is then placed in a refrigerator at a temperature of 2 C. (35.6 F.). The blood is available for immediate use during a period of eighteen days and even longer. The changes undergone by the refrigerated blood are of no importance clinically. The method avoids having donors on call and has the advantage of being available in emergency cases.

#### International Congress of Physical Education in 1937

At the Paris Exposition of 1937, an International Congress of Physical Education and Sport will be held during the week beginning July 14. The National Committee of French Sports and the president of the committee of organization, Dr. Collect, will have charge of the program. The object of the congress is to interest the French medical profession in encouraging boys and girls to take up sports in a more active manner than is at present the case. Intercollegiate competition is but little developed here, in spite of the fact that an assistant secretary of sports position in the cabinet has existed for some time.

#### Souvenirs of the Charité Hospital

Reference has been made in these letters to the demolition of the historic Charité Hospital in Paris in order to provide space for the new laboratory buildings of the medical school. The *salles de garde* of the older Paris hospitals are of great interest to those interested in medical history. The *salle de garde* of the Charité, or room in which the interns on duty for emergency cases assembled, sheltered during its 300 years of existence many of the most famous medical men of France during their internship at the Charité. On the walls of this particular *salle de garde* were a number of paintings by the best French artists of the respective periods. One of the most interesting of these paintings shows Velpeau and his intern chasing a quack, who even in those days guaranteed to cure cancer, from the Temple of Science. As a result of the initiative of Dr. Mourier, director of the public hospitals of Paris, all these paintings, which will be of great value to those interested in medical history, have been placed in a museum on the *de la Tournelle* in the center of Paris.

#### Laignel-Levastine Elected to Academy

Election as a fellow of the *Académie de médecine* is considered one of the highest honors that can be conferred on a member of the profession. At a recent meeting of the *Académie*, Dr. Laignel-Levastine of the *Hôpital Lariboisière*, neurologist and medical historian, was elected. He is professor of the history of medicine at the medical school of the University of Paris and secretary of the International Society of the History of Medicine.

#### Death of Dr. Jean Charcot

The sad death of Dr. Jean Charcot, captain of the vessel *Pourquoi Pas*, and all the crew except one, by shipwreck on the coast of Iceland during his last scientific expedition, was reported a few weeks ago in the daily papers. Jean Charcot was the son of the late Prof. Jean-Martin Charcot, the internationally known neurologist of the *Salpêtrière*, and was born in Paris in 1867. Following an internship in the Paris hospitals, he became chief of clinic at the *Salpêtrière* but soon ceased to practice and began his first oceanographic expeditions. He was especially interested in the study of geographic conditions at the north pole and in 1912 was given the grand medal of the French Geographic Society. After the World War he organized another expedition and brought back a large number

of important observations. As a recognition of his contributions to science he was elected a fellow of the Academy of Science and Academy of Medicine. Following the death of Dr. Charcot and his companions on his last polar expedition, the French government has decided to pay the highest honors in the form of a national funeral to the dead heroes as soon as the remains arrive in Paris. A special medal to commemorate the work of Dr. Charcot has also been ordered.

## BERLIN

(From Our Regular Correspondent)

Oct. 26, 1936.

### International Congress of Otorhinolaryngologists

The third International Congress of Otorhinolaryngologists was held at Berlin in August. Professor von Eicken presided. About 800 delegates, German and foreign, participated.

The first speaker, on the topic "Radiotherapy in Malignant Tumor Cases," was Berven of Stockholm, who is accustomed to treat malignant tumors of the oral cavity and of the mesopharynx with radium and, much less frequently, with roentgen rays. Because of the relatively large supply of radium available at the Stockholm "Radium Home" it is possible to administer telerradium therapy by means of "radium guns" which contain from 3 to 8 Gm. of radium sulfate. This offers the widest range of possible approaches as, for example, multiple field irradiation and cross-fire irradiation. Daily and total dosage are adapted to the requirements of each case; in addition, the general condition and age of the patient, and the best type of adjuvant treatment to be introduced are all considerations. The Stockholm men have also worked out a therapeutic program under which early stage syphilis cases have decreased from 60 per cent to 35 per cent within a ten year period. Late stage syphilis, on the contrary, has increased from 40 per cent to 60 per cent during the same period. This shows how rapidly and successfully the early stage cases are being combated. Naturally the excellent organization of the Stockholm institution has contributed to these favorable results.

Hautant of Paris undertook, in collaboration with Coutard, the treatment of cancer of the larynx at the Curie Institute, Paris; 25 per cent of 122 such cases could be considered cured at the end of a nine year follow up. Choice of irradiation or of operative treatment was made on the basis of the situation and type of the cancer and the patient's general condition. Irradiation is usually indicated if infiltration has not yet begun. If the vocal chords are still movable, it may be assumed that the carcinoma is not yet infiltrating. Otherwise the efficacy of the roentgen rays is dubious. According to Hautant's experiments "the epidermal epitheliomas, exophytic and vegetative in form," the cells of which have undergone only a suggestion of epidermoid alteration or none whatever, may be effectively irradiated. Other carcinomas of the infiltrating, ulcerating type are refractive to the rays, particularly if horny pearls are present in the altered epidermoid tissue.

Maisin of Louvain obtained his optimal results if the malignant growth had its seat in a tonsil or the distal two thirds of the tongue. Contrary to expectations, a combination of surgical therapy and radiotherapy yielded rather unfavorable results in the treatment of metastases in the lymphatics. Here roentgen treatment alone seemed to be advisable. Telerradium therapy appears most favorable if a cartridge containing 7 Gm. of radium is used.

Torrigiani of Florence applies protracted fractionated irradiation in cancer of the larynx and also in treating the lymph nodes. In cases of tumors within the accessory nasal cavities he recommends radiosurgery: a wide opening should be effected through the healthy palate in order that the region of the tumor may be treated by the most delicate technical procedures and any recurrence may be detected. If a malignant tumor is

situated in the ethmoid bone, an eye must be sacrificed if necessary in order that the focus may be more directly approached.

Schinz of Zurich determined by a vast amount of experimentation that better results were obtainable with the protracted-fractionated method of irradiation. To be sure, the sum of the end results of irradiation is not yet numerically as impressive as the sum of the results of operative treatment, but one must remember that the data on operative treatment have to do exclusively with more favorable cases.

Vogel of the Berlin clinic discussed the curative treatment of carcinoma of the vocal chords by a combination of operation and irradiation (thyroid cartilage fenestration) which, he said, is effective in an average of 90 per cent of such cases. In a large proportion of the cases, permanent cure has been determined by follow up of from five to seven years' duration. In 40 per cent of other cancers, likewise situated within the larynx, cure was effected by protracted fractionated roentgen irradiation and without surgical intervention; here, too, numerous cases exhibited no signs of recurrence after the lapse of more than three years.

The second major topic was "Electro-Acoustic Apparatus for the Testing and Improvement of Hearing." Langenbeck of Leipzig spoke of the advances made within the last twenty years through electro-acoustics. Electrical testing of hearing with the audiometer belongs today among the indispensable tools of clinical diagnostics. In the realm of auditory prosthesis, development as far as medical research is concerned is now essentially a question of technic. In this connection Pohlman of Omaha demonstrated a simple yet obviously effective hearing prosthesis. The theory of this device proceeds from anatomic assumptions. This prosthesis is soon to be examined at the Berlin clinic.

The third topic was "The Influence of the Constitution on Disorders of the Ear, Nose and Throat." It would seem that constitutional factors play a part in the manifestation of carcinoma in the hypopharynx and esophageal orifice of females.

### German Institute of Psychotherapy

The German Institute of Psychologic Research and Psychotherapy (Deutsches Institut für psychologische Forschung und Psychotherapie) has been established with the sponsorship of the National Ministry of the Interior. The membership is composed of representatives of the Pan-German Society of Psychotherapy, the German Psychoanalytic Society, the Künkel cooperative group for "Applied Study of Character" and also other well known psychotherapists. The three last named organizations will function within the institute as cooperative societies. The duties of the institute shall be (1) research, (2) educational and teaching activities and (3) maintenance of a policlinic for the indigent. The institute begins its work with the winter semester 1936-1937. The director of the institute is Prof. Dr. M. G. Göring, president of the Pan-German Medical Society of General Psychotherapy.

### Blood Tests for Alcohol in Traffic Accidents

The minister of the interior recently ordered blood tests for alcohol in connection with traffic accident cases. Such blood tests were first experimentally performed under the auspices of the Berlin police administration. On the basis of these experiments it is now stipulated that examination be made of all those persons involved in traffic accidents who are reasonably suspected of being under the influence of alcohol.

For determination of alcohol in the blood the micromethod of Widmark is indicated as a well known and reliable procedure. As soon as possible following the accident the specimen is drawn from the ear lobe or finger tip and collected in specially prepared glass tubes. The Widmark method has received recognition in an amendment to the criminal procedure

statute. In order to save expense the withdrawal of the blood specimen and the clinical examination are considered a part of the duties of the regular police physician. In order that the greatest possible exactitude and certainty may be obtained in the medical establishment of sobriety or inebriation, a medical examination must in each case be carried out and the observations properly recorded on questionnaire blanks. This procedure is particularly important if the alcoholic content of a suspected person's blood is not great enough to establish an alcoholic influence in the absence of other evidence. An especially valuable feature of the Widmark method is that by it not only the influence of alcohol but a state of sobriety may be determined; this may have a decisive bearing on the release from custody of a suspected person. Since the alcoholic content may be preserved for several weeks in the specially prepared glass tubes, the possibility of a later central examination in the main laboratory of the government hospital is guaranteed the police officials.

### Marriage Prospects of Professional Men

*Wissen und Dienst*, the publication of the German student bodies, has taken up the problem of marriage prospects for young professional men. It was stated as an established fact that university trained men have "the fewest children of any group of the population." The causes of this circumstance are being investigated particularly with reference to the situation, peculiar to the present, which has been created by the requirements of the labor service and of the two-year military service. After four years of elementary school and nine years of secondary school, the average "prep" graduate will be 19 years old. Then after fulfillment of labor and military service he enters the university at the age of from 21 to 22. If his professional course is considered as requiring a minimum period of from four to six years (medical students must complete at least eleven semesters of study), the average age of candidates for the final academic examinations will be from 26 to 27 years. All prospective physicians, jurists, government officials and so on are compelled to put in a further period of preparatory service, which may be as long as three and a half years and during which at best only a minimal compensation is received. At the time of his entry on a regular professional career the man is thus generally from 29 to 30 years old, and even then his annual income is scarcely sufficient to support a family. The minister of the interior, seeking to remedy this deplorable state of affairs, recently announced that henceforward the usual thirteen year period of general extensive education, four years of elementary and nine years of secondary school (gymnasium), shall be reduced to a twelve year period.

### Short Wave Therapy in Gynecology

Prof. Heinrich Guthmann, assistant at the university gynecologic clinic at Frankfort, recently addressed the medical society of that city. He prefaced his remarks by an objection to the term "ultrashort waves." In actual practice, radiations the wavelengths of which may vary from 3 to 15 meters are administered. Only partially understood are such biologic effects as displacement of the hydrogen ion concentration toward acidity, stimulation of phagocytosis, increase in the capillary permeability, the weakening of bacterial toxins and the reactive increase of calcium in the tissue. The complete picture corresponds to that presented by an increase in the tonus of the vagus. Because of these biologic alterations and of the active hyperemia produced by the penetrating irradiation, the procedure is applicable in all disorders in which these alterations are the desiderata and above all in inflammatory processes. In practice the local treatment, the artificial production of fever and the treatment of the superordinated organ are differentiated. In general it has been demonstrated that, in contrast to diathermy, results are favorable, the fresher the processes.

Furunculosis, Bartholinitis, perimetritis and adnexitis are all well influenced and favorable effects in gonorrhea have been noted. Gonorrhea of the mucosa is apparently not influenced. In genital tuberculosis this type of treatment is better endured than any other heat therapy, according to experimentation at the Frankfort gynecologic clinic. Only in those carcinoma cases in which fever was present was the treatment administered. The ill effects reported from other sources was not observed; on the contrary, there was an alleviation of pain. Neuralgias and spasms of various types react well. This treatment is indicated in inflammations of the gallbladder during pregnancy, in gonorrheal arthritis and in arthritis ovaripriva. In the last named disorder it should be combined with the administration of estrogenic preparations. The favorable results have not yet been given statistical representation. Favorable effects on the diseases have, however, been observed and the period of treatment has been shortened. Likewise of particular note are the successes achieved in cases which hitherto have been futilely treated by other methods. The treatment is seldom contraindicated. As to the method employed, the dosage in the absence of a physical measuring standard still depends in the last analysis on the thermic sensations of the patient. Individualization and consideration of the possible formation of an abscess may likewise determine the dosage and it should be assumed as axiomatic that the fresher the process the smaller the dosage to be introduced at the beginning. The method of administration will also vary according to the circumstances of a case; it depends not so much on the attainment of a maximal temperature as on the stimulation of a defense reaction in the organism. As Guthmann emphasized in his closing remarks, short wave therapy is to be regarded as a valuable physical therapeutic development. The technic must now patiently be brought to perfection.

### New Procedures in Ophthalmology

Professor Jess of Leipzig recently discussed in the medical society of that place innovations in therapeutic procedure. In 1929 Heine of Kiel described the adhesive glasses which he had brought to perfection and which were to be worn beneath the eyelids for the correction of anomalies of the corneal cone and of refraction. Meanwhile Professor Jess, first at his Giessen clinic and later at Leipzig, has been able to correct a greater number of cases of the same nature also by means of the adhesive glasses. His experiments established that a distinct correction is possible but that not all patients are adaptive to the wearing of the glasses. Hypersensitive persons with prominent eyes and tense lids do not become accustomed to the device. Other persons are wont, after appropriate instruction and a period of adaptation, to become entirely reconciled to the adhesive glasses. Irritations occasionally encountered never assume a serious character; slight opacities of the corneal epithelium tend to correct themselves after a longer wearing of the glasses. Artists, sportsmen and others who shy at the wearing of spectacles are amply recompensed by a trial of these adhesive glasses.

Jess discussed among other new operative procedures the lacrimal sac operation of Toti, by which the tear flow is restored. Only in the most extreme cases should the lacrimal sacs be radically removed; namely, if the presence of a corneal tumor demands that the source of infection be immediately shut off. In all other cases the attempt should be made to render the lacrimal sac again capable of function by a wide communication with the nose. The therapeutic effects of this last named intervention are excellent but rarely is there any later coalescence and then usually only if the postoperative cure is inadequate or faulty.

The new Elschmig method of extraction of cataract in the capsule and of the removal of a luxated lens by electrocoagu-

lation is an advance over the older procedures, as in the latter, after the tearing open of the capsule, the content of the capsule sac was more or less completely removed and extensive formations of secondary cataract often took place necessitating further operative interventions. Jess therefore resorts to the older methods only in overmature and soft cataracts in which the lens normally cannot be enucleated with the capsule. For all not wholly mature cataracts in which the capsule still possesses a greater solidity, intracapsular operation is preferable and the same is true in cases requiring extraction of a luxated lens. Following excision of the cataract, the lens, which has become firmly attached to a needle electrode by electrocoagulation, may be easily removed from the eye, a procedure that formerly was possible with the aid of loops and forceps.

### ITALY

(From Our Regular Correspondent)

Oct. 15, 1936.

#### Light as a Cause of Disease

Prof. Guido Guerrini, head of the pathologic institute of Bologna University, in a recent lecture to the army physicians spoke on light as a factor causing disease. Light is a stream of radiating waves varying in length from 4,000 angstrom units for the violet to 8,000 for the red. The action of light may be direct or indirect. Direct action induces local phenomena such as hyperemia. Indirect action induces general phenomena. The action of light depends on individual physiology, constitution, age and sex. Blond persons are forty times more sensitive to light than persons with a dark complexion. The elder are more sensitive than children and the latter more than youth. Men are twenty times more sensitive to light than women. The sensitivity of women increases during pregnancy and menstruation. The clinical forms of light disease may be phototraumatic, photodynamic, photobiologic and photo-anaphylactic. In phototraumatic light disease, the skin struck by light reflects a part but not all of the radiations. The remaining part enters the tissues. Through stimulation of the cutaneous nervous ends, hyperemia, xeroderma, senile keratosis and epitheliomatosis are induced and local inflammation results from the mobilization of histamine from the skin into the tissues and from nutritional alterations of the tissues. Light induces an accumulation of cholesterol in the uncovered surface of the skin, which facilitates metaplasia. Photodynamic light diseases are those in which light acts through catalyzing agents. The mechanism of production of photodynamic phenomena are not yet clear. Robuschi showed recently by experiments that light filtered through solutions of methyl violet kills mice, guinea-pigs and rabbits. Robuschi's phenomenon is important. Many researchers on this field have concluded that photocatalyzing agents have an inhibitive action. According to the speaker the action depends on the quantity: Large doses of photocatalyzing substances have an inhibitive action whereas small doses have a stimulative action. There are endogenous and exogenous photocatalyzing substances. The bile pigments and hematoporphyrin are endogenous photocatalyzing substances. Eosin, methylene blue, neutral red and the salts of quinine are exogenous. Pellagra, according to modern conceptions, is considered a photodynamic light disease resulting from endogenous photocatalyzing substances (indolethylamine, phenylamine and, perhaps, hematoporphyrin) rather than from the eating of maize. Photobiotrophic light diseases are those in which light plays a part, either by stimulating specifically the action of a virus or by inhibiting the defensive resistance of the body. Spring turunculos and staphylococic impetigo (in which light increases the virulence of staphylococcus) as well as lichen and psoriasis are forms of photobiotrophic light diseases. In actino-anaphylactic light diseases light renders the body either more

sensitive to a bacterial protein or more liberal in producing new antigens. Solar urticaria frequently has the character of a papulous dermatitis in which histamine is probably the antigen.

#### Vaccines and Serums for Africa

The Istituto Sieri-Vaccinogeni of Asmara is concerned with the preparation and distribution of serums and vaccines. From July 1, 1935, to April 30, 1936, 453,067 doses of smallpox vaccine were distributed in Africa. At present, 50,000 doses of the vaccine are weekly sent by air service to African sanitation centers; 44,276 head of cattle were vaccinated against plague in a month. Mortality from the plague is now 0.96 per cent. The laboratories of the institute are located several kilometers from Asmara. The institute has 3,000 heads of well fed cattle grazing. To increase the work of preventive immunization and also for making compulsory vaccination in African children, laboratories for the production of smallpox and antirabic vaccines are established at Addis Ababa. Some natives know about the benefits of vaccination and when Italian troops occupied the country they brought presents to the Italians asking to exchange them for the administration of smallpox vaccine.

#### Laws to Encourage Large Families

Regulations were recently approved by the council of ministers to provide married couples who have children more opportunities than couples without children. Couples will be given prizes by the provincial and the municipal authorities for having children. There will be a special prize from the state for mothers bearing twins. Parents having eight or more children are to be excluded from the payment of school taxes. Certain special licenses, which were previously necessary for the marriage of soldiers, municipal workers and women working in psychiatric institutions, have been abolished.

#### International Dermatologic Exhibit

Professor Tommasi, head of the syphilis and skin clinic of the University of Palermo, introduced a motion to the ninth International Congress of Dermatology which resulted in the establishment of a central office for study and interchange of scientific material. The office is called the "Centrum Commutatorium Dermatologicum," with headquarters during five years at the Budapest clinic. The work of the office will include the compilation of collections of scientific material, unification of scientific nomenclature and the teaching of dermatology. Collections will be made of photographs, microscopic slides, paraffin inclusions, wax preparations and similar material prepared in relation to rare diseases and those recently discovered and will be exhibited at the central office and its branches by changing the collections in the different branches for spreading the knowledge in different places.

## Marriages

ARNOLD PEEL MULKEY, Millen, Ga., to Miss Victoria Davis of Morehead City, N. C., in Kingston, N. C., August 12.

FREDERICK McCULLOCH MORRISON, Lynchburg, Va., to Miss Gertrude Davis Hancock of Beaufort, N. C., recently.

CHARLES GORDON MERRICK, Fort Myers, Fla., to Mrs. Elizabeth Woolslair Page in Jacksonville, September 8.

RUDOLPH DAVID MARTIN, Nanticoke, Pa., to Miss Helen Irene Gombar of Throop, August 7.

THOMAS LAWMAN LUCAS to Miss Jane Hill Agnew, both of Charleston, S. C., August 31.

WILLIAM C. McCONNELL to Miss Gladys Behlmer, both of Sunman, Ind., September 24.

JOHN I. LIMBURG JR., to Miss Frieda Schere, both of Cedar Bluffs, Iowa, recently.

PHILIP L. KURTZ to Miss Jane Elizabeth Walker, both of Indianapolis, July 15.

## Deaths

**Henry J. Gahagan** © Chicago; Rush Medical College, Chicago, 1893; practiced in Elgin, Ill., from 1897 to 1914, where he served as commissioner of health from 1897 to 1901, and city physician from 1901 to 1909; member of the American Psychiatric Association, member of its National War Work committee, 1917-1918, and chairman of its occupational therapy committee in 1918 and 1921; member of the medical house staff, attending physician, Elgin State Hospital, from 1893 to 1897, and superintendent from 1914 to 1917; medical director of the Mercyville Sanitarium, Aurora, since 1917; attending physician, consultant on the staff and member of the insanity committee of the Cook County Psychopathic Hospital; in 1916 was appointed by the board of administration of Illinois to visit the state institutions in New York, Pennsylvania, Maryland, Massachusetts and Ohio and report as to the industrial pursuits of patients; aged 68; was killed, November 10, when he was struck by an automobile as he alighted from a bus.

**John Fairbairn Binnie**, San Diego, Calif.; University of Aberdeen Faculty of Medicine, Scotland, 1886; began practice in Kansas City, Mo., in 1889; member of the Missouri State Medical Association; secretary of the Section on Surgery and Anatomy of the American Medical Association, 1908-1909; at one time professor of surgery at the University of Kansas School of Medicine, Kansas City, Kan.; formerly on the staff of the Kansas City (Mo.) General Hospital; organized Base Hospital 28 as a Red Cross unit before the war and directed the unit in France until he was assigned as surgical consultant to the third army corps; member of the American Surgical Association and the Society of Clinical Surgery; fellow of the American College of Surgeons; author of a widely known manual on "Operative Surgery"; aged 73; died, November 28.

**Charles Griffin Plummer**, Salt Lake City; Chicago Medical College, 1888; practiced at Salt Lake City since 1891; member of the Utah State Medical Association; for three years colonel in the first infantry of the Utah National Guard; member of the Utah State Commission for Feeble-Minded for four years; on the staff of the Latter-Day Saints Hospital; formerly regent to the University of Utah; awarded testimonial by citizens for service to community and work with youth; in 1935 was awarded twenty-five year veteran silver badge by the National Council, Boy Scouts of America; aged 77; died, November 19.

**Harper M. Workman** © Tracy, Minn.; Chicago Medical College, 1878; member of the House of Delegates of the American Medical Association, 1905-1906; secretary of the Lyon-Lincoln Counties Medical Society; councilor of the third district and past president of the Minnesota State Medical Association; fellow of the American College of Surgeons; first mayor of Tracy; for many years president of the school board; aged 81; died, October 8, of myocarditis and nephritis.

**Eugene Garfield McKeown** © Pipestone, Minn.; University of Minnesota College of Homeopathic Medicine and Surgery, Minneapolis, 1909; fellow of the American College of Surgeons; formerly secretary of the Southwestern Minnesota Medical Society; county health officer; served during the World War; medical director of the Pipestone Indian Hospital; on the staff of the Ashton Memorial Hospital; aged 55; was killed, October 20, in an automobile accident.

**Chester Sylvester Leach** © Brattleboro, Vt.; University of Vermont College of Medicine, Burlington, 1899; past president and secretary of the Windham County Medical Society; vice president of the New England Physical Therapy Society; at one time district health officer; roentgenologist to the Brattleboro Memorial Hospital; aged 60; died, October 23, in the Baker Memorial Hospital, Boston, of coronary embolism.

**Bernard Anthony O'Hara**, Detroit; Washington University School of Medicine, St. Louis, 1917; member of the American Academy of Ophthalmology and Oto-Laryngology; fellow of the American College of Surgeons; served during the World War; at various times on the staffs of the Woman's Hospital, Children Hospital, Henry Ford Hospital and Harper Hospital; aged 47; died, October 29, of rheumatic heart disease.

**Charles Edward Woodbury**, Acworth, N. H.; University of the City of New York Medical Department, 1873; member of the Rhode Island Medical Society; at one time inspector of institutions for lunacy and charity in Massachusetts; formerly superintendent of the Rhode Island Hospital, Providence, and the Foxboro (Mass.) State Hospital; aged 90; died, October 31, at the home of his daughter in Roslindale, Mass.

**John A. Klump**, Williamsport, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1881; past president of the Lycoming County Medical Society; consulting surgeon to the Williamsport Hospital; fellow of the American College of Surgeons; aged 80; died, October 21, in the Danville (Pa.) State Hospital, of cerebral arteriosclerosis and bronchopneumonia.

**Duncan Campbell**, Woodbury, N. J.; Hahnemann Medical College and Hospital of Philadelphia, 1895; member of the Medical Society of New Jersey; for many years lecturer on medical terminology at his alma mater; formerly on the staff of the Underwood Hospital; aged 69; died, October 30, in the Broad Street Hospital, Philadelphia, of cerebral hemorrhage.

**James Garfield Paschen**, Wauwatosa, Wis.; Milwaukee Medical College, 1908; member of the State Medical Society of Wisconsin; associate member in medicine on the staff of Mount Sinai Hospital, Milwaukee; aged 51; died, October 28, in the Columbia Hospital, Milwaukee, of cerebral hemorrhage and splenomyelogenous leukemia.

**David Judson Barton**, Anderson, S. C.; University of Georgia Medical Department, Augusta, 1906; member of the South Carolina Medical Association; president and formerly secretary of the Anderson County Medical Society; at one time on the staff of the Anderson County Hospital; aged 54; died, October 23.

**John Milton Holt**, Los Angeles; Long Island College Hospital, Brooklyn, 1895; served during the World War as director of sanitation for the Houston extracantonment zone; formerly city health officer; for many years attached to the U. S. Public Health Service; aged 63; died, October 15, of coronary occlusion.

**David Clarence Confer**, Duncansville, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1881; member of the Medical Society of the State of Pennsylvania; formerly postmaster, member of the school board and secretary of the board of health; aged 79; died, October 23.

**Frank Clifford Walker**, Windsor, Vt.; Boston University School of Medicine, 1884; for many years health officer of Windsor; at one time city physician in Taunton, Mass.; formerly on the staff of the Morton Hospital, Taunton, Mass.; aged 78; died, October 19, of coronary occlusion.

**Frederick Harvey** © Chicago; Chicago College of Medicine and Surgery, 1915; fellow of the American College of Surgeons; served during the World War; member of the attending staff of the Grant Hospital; aged 46; was killed, December 9, in an automobile accident.

**William James Renwick McFarland**, Syracuse, N. Y.; Baltimore Medical College, 1897; member of the Medical Society of the State of New York; on the staff of the People's Hospital; aged 63; died, October 23, of carcinoma of the pancreas and obstructive jaundice.

**Joseph Benjamin Moxley**, Brantley, Ala.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1899; member of the Medical Association of the State of Alabama; formerly member of the state legislature; mayor of Brantley; aged 58; died suddenly, October 30.

**John King Stewart**, Tacoma, Wash.; Hahnemann Medical College and Hospital, Chicago, 1910; member of the Washington State Medical Association; served during the World War; aged 68; died, October 21, in the Tacoma General Hospital, of acute coronary thrombosis.

**Edward James Delaney**, Concord, N. H.; Baltimore Medical College, 1903; member of the New Hampshire Medical Society; for many years physician to the state prison; on the staff of the Mary Pillsbury Hospital; aged 58; died, October 21, of cirrhosis of the liver.

**Richard Joseph Shannahan**, Worcester, Mass.; Columbia University College of Physicians and Surgeons, New York, 1903; member of the Massachusetts Medical Society; for many years a police surgeon; aged 57; died, October 31, of arteriosclerotic heart disease.

**Augustus Woodbury Calder**, Providence, R. I.; Harvard University Medical School, Boston, 1895; member of the Rhode Island Medical Society; veteran of the Spanish-American and World wars; aged 67; died, October 25, of coronary occlusion and arteriosclerosis.

**Leo Schram** © Dayton, Ohio; Hahnemann Medical College and Hospital, Chicago, 1892; past president of the Montgomery County Medical Society; city physician; for many years on the staff of the Miami Valley Hospital; aged 68; died, October 5, in Russells Point.

**Antoine A. Laurent** ☉ Minneapolis; Minneapolis College of Physicians and Surgeons, 1911; member of the staffs of St. Mary's, St. Barnabas, Northwestern and Deaconess hospitals; aged 54; died, October 21, of coronary thrombosis and arteriosclerosis.

**James Logan McMillan** ☉ Decaturville, Tenn.; College of Physicians and Surgeons, Memphis, 1907; past president and secretary of the Decatur County Medical Society; aged 51; died, October 31, in the Protestant Hospital, Nashville, of neurofibroma.

**Joseph Foster Grant**, San Diego, Calif.; University of Louisville (Ky.) Medical Department, 1890; fellow of the American College of Surgeons; served during the World War; on the staff of the San Diego County Hospital; aged 67; died, October 27.

**David Lyle**, Rock Hill, S. C.; Medical College of the State of South Carolina, Charleston, 1909; formerly member of the state legislature, and mayor of Rock Hill; on the staff of St. Philip's Mercy Hospital; aged 57; died, October 25, of angina pectoris.

**Herbert Elton Doty**, Concordia, Kan.; Ensworth Medical College, St. Joseph, Mo., 1906; member of the Kansas Medical Society; county coroner; aged 67; on the staff of St. Joseph's Hospital, where he died, October 19, of chronic myocarditis.

**Albert Eugene Fuchs** ☉ Bunker Hill, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1912; formerly a practitioner in Chicago; aged 61; died, October 27, of diabetes mellitus.

**August Lillencrantz**, Oakland, Calif.; Rush Medical College, Chicago, 1870; member of the California Medical Association; aged 89; died, October 9, in Peralta Hospital, of a skull fracture received when struck by an automobile.

**Fredrick Cushman Kinney**, Hardwick, Vt.; University of Vermont College of Medicine, Burlington, 1882; member of the Vermont State Medical Society; aged 78; died, October 21, in the Hardwick Hospital, of cerebral hemorrhage.

**Mary Frances Deraismes Thornton**, Albany, N. Y.; Cornell University Medical College, New York, 1902; aged 62; died suddenly in October in New York of fracture of the neck of the femur and coronary sclerosis.

**Olav S. Behrentz**, Three Rivers, Mich.; Rush Medical College, Chicago, 1903; for many years a medical missionary in China; aged 63; died, December 8, in the Presbyterian Hospital, Chicago, of coronary sclerosis.

**Arthur Elias Henby**, Seattle; Chicago Homeopathic Medical College, 1897; member of the Washington State Medical Association; served during the World War; aged 62; died, October 8, of coronary disease.

**Howard Leonard Reed**, Henrietta, Texas; University of Oklahoma School of Medicine, Oklahoma City, 1916; served during the World War; aged 52; died, October 23, in a hospital at Wichita, of pneumonia.

**Victor Mackay Daly**, Pontiac, Ill.; University of Edinburgh Faculty of Medicine, Scotland, 1892; served during the World War; on the staff of St. James Hospital; aged 69; died, October 22, of heart disease.

**Nathaniel Hooks Lozier**, Sandersville, Ga.; Atlanta Medical College, 1914; member of the Medical Association of Georgia; aged 46; died, October 21, at a hospital in Atlanta, of a streptococcal infection.

**Jonathan Jay Pitcher**, Mount Pleasant, Iowa; Hahnemann Medical College and Hospital, Chicago, 1906; member of the Iowa State Medical Society; aged 54; died suddenly, October 22, of a cerebral hemorrhage.

**Norman Bates Dresser**, Berlin, N. H.; Medical School of Maine, Portland, 1919; formerly county coroner and city health officer; aged 41; was found dead in bed, October 20, of acute dilatation of the heart.

**George A. Downs**, Spokane, Wash.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1902; served during the World War; aged 59; died, October 18, of disseminated sclerosis.

**William Owen Wisner**, Spokane, Wash.; Medical Department of Omaha University, 1892; formerly county health officer; aged 71; died, October 17, in the Sacred Heart Hospital, of lobar pneumonia.

**Adolph W. Hanson**, Portland, Ore. (licensed in Minnesota by years of practice); (licensed in Iowa in 1898); aged 76; died, October 8, of cardiovascular renal disease and cerebral hemorrhage.

**Edwin Eli Wilcox**, Salt Lake City; University of the City of New York Medical Department, 1894; on the staff of the Dr. W. H. Groves Latter-Day Saints Hospital; aged 71; died, October 7.

**Charles Lindley Johnston**, Plattekill, N. Y.; University of Michigan Homeopathic Medical School, Ann Arbor, 1884; aged 78; died, October 24, of paralysis agitans and cardiac dilatation.

**Albert Nicholas Jacob** ☉ Sparta, N. J.; Jefferson Medical College of Philadelphia, 1888; past president of the Sussex County Medical Society; aged 72; died, October 27, of coronary embolism.

**James D. McKie**, Vandale, Ark.; University of Louisville (Ky.) School of Medicine, 1876; member of the Arkansas Medical Society; aged 84; was killed, October 14, when struck by a train.

**George Albert McLane**, Harvard, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1906; aged 60; died, October 2, of chronic nephritis.

**Charles Augustus Lerch**, Akron, Ohio; Cincinnati College of Medicine and Surgery, 1877; aged 84; died, October 21, in the City Hospital, of hypostatic pneumonia following a Colles fracture.

**Leslie Allen Wilson** ☉ Cameron, Mo.; Northwestern University Medical School, Chicago, 1921; secretary of the Clinton County Medical Society; aged 45; died in October of heart disease.

**George W. Smith**, Washington, D. C.; Howard University College of Medicine, Washington, 1885; aged 81; died, October 8, in the Garfield Hospital, of carcinoma of the bladder.

**Samuel W. Dunlavy**, Coffeyville, Kan.; Keokuk (Iowa) Medical College, College of Physicians and Surgeons, 1902; aged 63; died, October 31, of acute dilatation of the heart.

**William P. Miles Jr.**, New Orleans; University of Maryland School of Medicine, Baltimore, 1890; aged 69; died, October 4, of cerebral thrombosis and arteriosclerosis.

**Frank Segel Smith**, St. Peter, Ill.; Kentucky School of Medicine, Louisville, 1892; county coroner; aged 70; died, October 26, at Vandalia, of heart disease.

**Henry J. Leigh**, Tower City, N. D.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1891; aged 70; died, October 22, of carcinoma of the stomach.

**Paul Lannom Dickson**, Los Angeles; Barnes Medical College, St. Louis, 1900; aged 60; died, October 22, in the Good Samaritan Hospital, of heart disease.

**Gipson W. Stagner**, Richmond, Ky.; Louisville Medical College, 1890; aged 75; died, October 31, in the Good Samaritan Hospital, Lexington, of uremia.

**Thomas A. Lynch**, Brooklyn; Long Island College Hospital, Brooklyn, 1908; served during the World War; aged 51; died, October 28, of heart disease.

**George Logan Hall**, Baltimore; Howard University School of Medicine, Washington, D. C., 1914; aged 51; died, October 31, of aortic insufficiency.

**Albert E. Byron**, Oakland, Calif.; California Eclectic Medical College, Los Angeles, 1895; aged 64; died, October 28, of a self-inflicted bullet wound.

**Henry R. Riemer**, St. Joseph, Mo.; Ensworth Medical College, St. Joseph, 1897; also a minister; aged 90; died, October 29, of arteriosclerosis.

**Gustavus Adolphus Spivey**, Dallas, Texas; University of Louisville (Ky.) Medical Department, 1876; aged 85; died, October 24, of senility.

**Abner Jackson Mynatt**, Lamar, Mo.; University Medical College of Kansas City, 1898; aged 67; died, October 14, of heart disease.

**Edward Wenger**, St. Louis; Beaumont Hospital Medical College, St. Louis, 1890; aged 68; died suddenly, October 17, of heart disease.

**T. I. Mohler**, Palestine, Ark. (licensed in Arkansas in 1903); Civil War veteran; aged 92; died, October 19, of arteriosclerosis.

**John E. Westaver**, St. Louis; St. Louis College of Physicians and Surgeons, 1898; aged 84; died, October 10, of general debility.

**Fred Ernest Zumstein**, Detroit; Miami Medical College, Cincinnati, 1900; aged 70; died, October 30, of cerebral hemorrhage.

## Correspondence

### "AUTOGENOUS SERUM TREATMENT OF NARCOTIC ADDICTION"

To the Editor:—In THE JOURNAL, October 17, page 1337, appeared a lengthy abstract on Autogenous Serum Treatment of Narcotic Addiction (Black, D. M.: *Canad. M. A. J.* 35:177 [Aug.] 1936). I believe that the purpose of Current Medical Literature is to advise readers of advances or new treatments published elsewhere. The following will make clear my object in writing:

According to *La tribune médicale* (December 1929, p. 564) Modinos first called attention to the therapeutic value of serum from blisters some twenty years before this article (1929). Lassablière called attention to this treatment in *Médecine* (December 1928). Modinos reports eight cases of narcotic addiction treated by this method; three of these cases are given in considerable detail.

Based on these reports, I tried this treatment in 1933 in a case of diacetylmorphine addiction. While the cantharides plaster produced an acceptable blister, the restlessness of the patient during the night made him burst the blister. On repetition of the experiment the same unsatisfactory results were obtained. I then considered using his own whole blood. Withdrawal of the 10 cc. was successful, but the blood immediately coagulated in the syringe. Since a foreign protein appeared to be the basis of treatment, I then used 10 cc. of boiled milk intramuscularly with some success. This dose was repeated three times. This case, however, proved to be one of those unmanageable ones, and the patient continued his addiction.

Shortly after I used boiled milk again in a similar case. Four injections, together with phenobarbital by mouth, gave satisfactory results, and the patient had no more desire for narcotics.

In the third case of diacetylmorphine addiction, the patient, treated like the other two, abstained from narcotics for thirty days but then relapsed. Since the drug appears to be well eliminated from the system after such an interval, other reasons for his return to the drug have to be considered.

Lest some one thinks that my treatment is new, I wish to mention Amsler, C.: *Zur Frage der Entwöhnung von narkotischen Giften* (*Klin. Wchschr.* 13:773 [May 26] 1914). He states that Biberfeld used the protein of goat milk parenterally with success. This article came to my attention after the treatment of the three cases mentioned.

HANS SCHROEDER, M.D., San Francisco.

### DETERMINATION OF GALACTOSE IN URINE

To the Editor:—My attention has been called independently by Dr. Walter R. Johnson of Asheville, N. C., and Dr. Hans Wassing of Paterson, N. J., to an error in my article on "Painless Jaundice," which appeared in THE JOURNAL, May 11, 1935, p. 1681. In that article I stated that "the determination of galactose in the urine is done exactly like the quantitative determination for dextrose; the only modification is that, because of the greater reducing power of galactose, it is necessary to multiply the result by 0.7."

Dr. Wassing calls my attention to wide discrepancies in practice in different laboratories and in different textbooks. Thus, he says that Gradwohl in his textbook states that 25 cc. of Benedict's reagent is reduced by 54 mg. of galactose. Therefore, one would use a correction of 1.1. Wassing himself found approximately the same, 55 or 56 mg. of galactose reducing 25 cc. of the reagent.

Mattice in his "Chemical Procedures for Clinical Laboratories," Philadelphia, Lea & Febiger, 1936, page 66, says: "5 ml. of Benedict's quantitative reagent are reduced by 12.5 mg. of galactose." This would correspond to 25 cc. of the reagent being reduced by 62.5 mg. of galactose and would give a correction of 1.25.

I asked Dr. Sobotka, chemist at Mount Sinai Hospital, to investigate this question and his assistant, Miss Miriam Reiner, writes me as follows:

The galactose used in these experiments was *d*-galactose c.p. Pfanstiehl with a specific rotation plus 80.5°. This sugar had previously been dried over phosphorus pentoxide in a desiccator. The galactose was carefully weighed and the solution was checked in the polariscope; 2 per cent solution in a 2 cm. tube had a specific rotation of plus 80.5°.

The Benedict reagent was first checked with a glucose solution; 25 cc. was reduced by 50 mg. of glucose. When the galactose solution was used, 65 mg. were necessary to reduce the same amount of Benedict's. Since galactose has a lower reducing value than glucose, the factor is glucose: galactose as 50 mg.: 65 mg., or 1:1.30.

Since the main contaminant of commercial galactose is glucose, the reducing factor of such a sugar would approach the glucose factor, depending upon the amount of glucose present in the sample. The specific rotation of galactose is plus 80.5° and that of glucose is plus 52.5° so that the presence of glucose would lower the specific rotation of the sugar sample.

After taking all these factors into consideration, and comparing my standard galactose with a similar glucose solution, I think we can safely say that the galactose factor for Benedict's quantitative sugar reagent is 1.30.

REUBEN OTTENBERG, M.D., New York.

### WATER FILTRATION VS. CHLORINATION

To the Editor:—My attention has been called to the editorial "Water Filtration vs. Chlorination," which appeared in THE JOURNAL, October 31. The citation of Altona, Germany, as an example of a case in which filtration failed to give adequate public health protection is hardly justified by the reported facts of the classic Hamburg-Altona cholera epidemic of 1892. The Altona experience should properly be cited as a classic example of the public health benefits of filtration and not its limitations. This epidemic preceded both the advent of chlorination for public health purposes and important developments in rapid sand filtration commonly used today.

The outstanding record of water filtration in reducing the typhoid and general death rate in cities where water from polluted sources was formerly used is one of the greatest achievements in public health in America, and much of this was accomplished before chlorination was practiced. It is hardly possible to put chlorination and filtration on the same comparative plane. In modern water works practice the two processes logically go together and in no sense are competitive in meeting modern standards of public health for water supplies. Chlorination is an effective sterilizing agent and its cost in treating public water supplies is almost insignificant in proportion to the benefits derived. Filtration in its broadest sense is a complete process of purifying water including safety, palatability and physical appearance, and the use of chlorine is usually implied when the water is used for domestic purposes.

From a public health standpoint, all public water supplies should be chlorinated. Chlorination, since its first use in water sterilization in 1908, has developed to be one of the greatest factors in safeguarding the public health of cities and communities. But chlorination has its limitations and they must be recognized. Chlorination within practical limits does not destroy certain resistant microscopic organisms found in water, especially *Bacillus welchii* and the cysts of *Endamoeba histolytica*, which are of public health significance. Chlorine or chlorine compounds may result in objectionable tastes in water either through the use of large quantities or as a result of combination with other substances, especially in water pol-

luted by sewage and industrial wastes. It does not remove objectionable tastes and odors such as oil refinery wastes. Chlorine is rapidly absorbed by dissolved and suspended matter in the water, especially by organic compounds.

Not all water supplies, especially ground water, may need filtration, but most surface water supplies regardless of their source can be markedly improved in taste and physical appearance and safety at moderate expense through filtration. Any source of public water supply that is exposed to pollution or objectionable turbidities should be filtered as well as chlorinated. Chicago is a good example. Lake Michigan, the source of supply, is normally clear, but the water at the city's intakes is at times polluted by sewage and industrial wastes and is frequently turbid to an objectionable degree. Chlorination is a public health necessity. Effective chlorination is complicated and difficult in spite of rigid control measures, because of the wide variation in the chlorine demand of the lake water. If this demand were to exceed the chlorine dosage applied to the water, the sterilizing action would be very much limited. A serious health risk exists every time sudden and excessive pollution of the lake waters in the vicinity of the intakes occurs. These periods can be foreseen to some extent but not always, and there is a decided element of risk connected with dependence on chlorination alone. Filtration would correct this condition.

In a filter plant, the time of passage through the settling basins and filters gives the chemist an opportunity not only to sterilize and clarify the water but also to treat it to remove all tastes. This time interval permits adjustment of treatment to correct for sudden changes in the character of the raw water. With intelligent operation a uniformly clear palatable and safe water can be supplied at all times. Filtration permits the maintenance of a clean distribution system and thus clean water through to the tap of the ultimate consumer. Such a condition is not true of chlorinated unfiltered surface waters and frequently of clear ground waters. Raw natural waters of this type frequently cause growths and deposits in mains. Surface waters that may look clear in the glass usually contain large numbers of micro-organisms in suspension. These will settle out in zones of low velocity in a distribution system, decay and cause a fishy, grassy taste in the water and a discoloration that is very objectionable to the consumer.

It is true that many water outbreaks in recent years have been caused by pollution of water en route to the consumer through cross connections with the public distribution system. This is a regrettable condition but one that has nothing to do with the merits of chlorination as against filtration without chlorination, which is doubtful practice. By using the ammonia-chlorine processes for treating the filtered water, residual chlorine can be carried throughout a distribution system without causing objectionable tastes in the water. But this process requires several hours for effective bactericidal action. With a filtration plant this retention period is provided. The cost of complete purification of a public water supply is so low in comparison with the benefits to be derived that the economics of chlorination versus filtration should hardly be considered, especially where the public health is threatened.

ARTHUR E. GORMAN, B.S., Chicago.

*To the Editor:* I have noted with interest the editorial which appeared in the October 31 issue of THE JOURNAL entitled "Water Filtration vs. Chlorination." Owing, however, to the occurrence of a factual error in the reference to the 1892 epidemic of cholera in Altona, Germany, and the consequent reflection on the effectiveness of filters in the purification of water, it is thought that you might wish to present the following comment to your readers.

The cholera epidemic occurring in Germany in 1892 was the first practical demonstration of the effectiveness of filtration in the prevention of water-borne disease. The city of Hamburg, supplied with unfiltered water from the Elbe River, experienced a severe epidemic of cholera, whereas no such epidemic occurred in the neighboring community of Altona, served with the same water after filtration through slow sand filters. Furthermore, the editorial mentioned may be misleading in that it implies that all public water supplies may be effectively chlorinated and that filtration is needed merely to clarify the water and produce a water which is attractive to the consumers.

In general, both chlorination and filtration of water have inherent weaknesses which must be recognized. As a result, both methods of treatment are normally required when polluted surface waters are being treated. This fact may be overlooked, however, and undue confidence placed in the effectiveness of chlorination alone. This justifies a brief statement as to the limitations of chlorination alone, which is inherently subject to interruptions because the failure of chlorine treatment results at once in the delivery of untreated raw water, whereas ineffective filtration is at least partially effective. The effectiveness of chlorination is influenced to a marked extent by the fact that the chlorine dose must be varied under adequate control to compensate for changes in the chlorine demand of the water, which fluctuates with the organic content, temperature and pH value of the water. Furthermore, suspended solids in the raw water, especially those which may protect bacteria associated with pollution, interfere with the disinfecting action and prevent chlorine reaching the embedded bacteria, unless the dose is higher than permissible from the standpoint of the production of a tasteless water. My point is that chlorination must be used in conjunction with filtration when the average surface water is being treated. It is for this specific reason that Milwaukee is now constructing a filtration plant and that a similar plant is being advocated for Chicago.

Fortunately, an approximate quantitative estimate may be made as to the effectiveness of chlorination alone, and of chlorination when combined with rapid sand filtration, as a result of studies by the United States Public Health Service at Cincinnati, Ohio. For instance, these studies indicate quite clearly that the average surface water cannot be effectively chlorinated in the absence of filtration, unless the average number of organisms of the coli-aerogenes group is less than from 80 to about 100 per hundred cubic centimeters of water, provided the number of such organisms in the raw water is less than 450 per hundred cubic centimeters 95 per cent of the time. On the other hand, filtration combined with chlorination permits the effective treatment of a much more heavily polluted water, because with this more complete treatment the average number of organisms of the coli-aerogenes group of the raw water may be from 3,500 to 5,000 per hundred cubic centimeters of water, provided the maximum number of such organisms is less than 20,000 per hundred cubic centimeters 95 per cent of the time.

If the foregoing standards as to the degree of pollution of the raw water are complied with, the treated water will meet the Treasury Department standards as to the quality of water permissible for use on interstate carriers.

I have discussed this matter at considerable length because it is very desirable that the confidence of the public in the effectiveness of filtration plants be maintained and that undue confidence may not be placed in the effectiveness of the chlorination of the average surface water.

PAUL B. BROOKS, M.D., Albany, N. Y.

Deputy Commissioner of Health,  
State of New York.

## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

### TRAUMA AND ABORTION

*To the Editor:*—A woman, aged 24, whom I had never seen or examined before, had an incomplete abortion of about three and one-half to four months. She gave the history of having fallen from a boat to a stone wharf, a distance of about 3 feet. She states that she fell on her abdomen. I said at the time, and I still feel, that the fall per se did not produce or induce the abortion. But I do not feel that all these cases are caused by distinct pathologic entities, endocervicitis, and so on. Later curettage was done and the secundines were examined microscopically. This case is coming up for trial as the woman is suing the ferry boat company for negligence and stating that the fall is the cause of the abortion. I imagine her lawyers will ask me if a fall could cause an abortion, or, since I never examined the woman before, how could I say anything else than that the fall caused abortion? How long after a fall could it be precluded that the fall was the cause of the abortion? What would you advise as to the position I should take on this matter? Please give reasons. I mean medically and not legally or from a legal standpoint. Would the length of time the patient was pregnant have any bearing on this type of abortion? Have you any figures on this? Please omit name.

M.D., Ohio.

*ANSWER:*—When suits of this type arise, the following points must be determined if possible: (1) the existence of pregnancy prior to the accident, (2) the presence or absence of signs or symptoms of abortion prior to the accident, (3) the presence or absence of factors predisposing to abortion aside from the alleged cause, and (4) the actual occurrence of abortion. Since the correspondent had not examined the patient before the accident he will be unable to testify that she was three or four months pregnant before the accident. He will be unable to vouch for the presence or absence of signs or symptoms of abortion prior to the accident. In considering possible factors in abortion he should try to determine the following: (1) abnormality of the fetus, such as knotted cord, deformity, or other anomaly that could not be the result of trauma to the mother; (2) abnormality of the placenta, such as syphilis or tuberculosis; (3) constitutional factors in the mother predisposing to abortion, such as dietary or vitamin deficiency, or history of previous abortion; (4) existence of focal infections, which are sometimes held responsible for abortion; (5) existence of pelvic abnormalities such as myoma, cysts, cervicitis, severe lacerations, pelvic inflammatory disease and (?) retroversion; (6) systemic diseases, such as syphilis, tuberculosis or toxemia of pregnancy; (7) exposure to toxic agents, such as lead, irradiation, too much alcohol or nicotine; (8) previous operative procedures, such as trachelorrhaphy; (9) intercourse immediately prior to abortion, and (10) vigorous douching with cold or hot water. The possibility of induced abortion prior or subsequent to the accident must be remembered. Since retained secundines were removed and examined microscopically, the physician can testify factually regarding the existence of pregnancy. That is almost the only unqualified statement that he can make. His opinion will be based largely on the presence or absence of the predisposing factors enumerated. For authorities he may consult Taussig (*Abortion, Spontaneous and Induced*, St. Louis, C. V. Mosby Company, 1936, p. 114): "That [external injury or strain] is often an important contributing factor in the initiation of uterine contractions cannot be gainsaid. But in most instances a careful analysis will show other more fundamental causes. One may well be skeptical of the effect of even rather violent external trauma in the production of abortion since we have so many instances in which internal manipulations such as curettage have failed to bring on an abortion." Taussig (p. 114) quotes Seitz that the greatest tendency for traumatic interruption of pregnancy is in the first sixteen weeks, even though at this time the uterus lies more protected in the pelvic cavity than later. Taussig says "Sexual intercourse is probably one of the most positive direct traumatic agents productive of abortion" (p. 114). He considers "psychic trauma" an undoubted factor. D. M. Lindsay (*Trauma and Compensation in Obstetric and Gynaecological Cases*, Edinburgh and London, William Hodge & Co., Limited, 1928, pp. 41-42) says "Possibly the proper view to accept [regarding fright, fall or injury] is that accident as a cause of such complication [abortion] is rare in the absence of some already predisposing factor, but that it can cause miscarriage without other predisposing factors I am satisfied." J. R. Miller gives a good list of

references (*Trauma and Compensation in Gynecology and Obstetrics*, *Am. J. Obst. & Gynec.* 26:839 [Dec.] 1933). Presumably a trauma severe enough to cause abortion would promptly produce abortion. No time limit can be stated because of the possibility of missed abortion with a long latent period. The physician in the present case will do well to confine himself to facts and state his own opinion cautiously.

### PERSISTENT YAWNING

*To the Editor:*—I have a case of hysteria manifested by continuous yawning, which began about five months ago following recovery from a successful operation for removal of the gallbladder. The yawning becomes so severe at times that the jaws become painfully sore. Sedatives give only temporary relief. Endocrine therapy has not seemed to help any. I am unable to find any foci of infection. I would appreciate any suggestions you may offer.

M.D., Louisiana.

*ANSWER:*—In normal persons and other animals, yawning is essentially an involuntary deep inspiration accompanied by wide opening of the mouth and frequently stretching of the body musculature. The conditions leading to this act are usually marked mental and physical weariness or fatigue, such as may be brought on by prolonged mental or physical exertion, low blood pressure or some degree of tissue asphyxia. The performance of this act in one individual has a peculiar suggestive potency in others, leading to the same act in them, if conditions are favorable. Persistent yawning in hysteria is usually only one (and not a frequent) manifestation of hysteria. There is no known reason why hysterical yawning should be connected with convalescence from a gallbladder operation, unless the operation resulted in prolonged low blood pressure or interference with the respiration leading to tissue asphyxia, in which case, in a susceptible person, the yawning may have been established as a habit; but this would scarcely be called true hysteria. Endocrine therapy in this condition would be purely empirical and sedatives, of course, of only temporary value. If the patient is more or less depressed, thyroid therapy might help a little. If there is interference in circulation or respiration, stimulants should act more favorably than sedatives. If it is a habit developed during a long period of convalescence, stimulants and cheerful and interesting surroundings might help to overcome the habit. If it is true hysteria and the person manifests other indications, such as chronic fatigue and depression, one should try vasomotor and central nervous system stimulants and a cheerful and stimulating environment, combined with the usual psychomotor reeducation therapy, sometimes effective in hysteria.

### INVERTED VISION

*To the Editor:*—A boy who will be 9 years old next January and is now in the third grade is a very good student—about B or B plus. Within the last three weeks he has taken to turning his book upside down to read. He also inverts his number book. He reads from the blackboard and only seldom tells the teacher that she is writing upside down. He reads numbers from the blackboard and usually gets the work done right side up on paper. Only once has he written his name upside down. He plays an instrument and tells his mother that he doesn't see how she can play music upside down. He was reading a book. I asked him what the story was about and I took the book and looked at it and handed the book back to him right side up. He said he couldn't read the book upside down and proceeded to invert it and read. I do not think a youngster of that age would think of this as a means of gaining attention and be so consistent in it.

M.D., Louisiana.

*ANSWER:*—Cases of reversals and inversions in reading are not uncommonly found in a large school system; in fact, their occurrence is sufficiently frequent so that considerable work has been done by educational psychologists with reference to this problem. There are several theories as to its causation, the most prominent of which has to do with cerebral dominance. Some observers seem to think that inversions or reversals occur in left handed individuals who are compelled to use the right hand or vice versa. Others who distinguish the problem of "eyedness" from "handedness" seem to think that, although the individual may be using the proper hand, contralateral eye dominance may be present, which adds to the confusion. After an emotional upset or an acute ailment a suppressed eye or hand dominance may cause a sudden change in the capacity to read or to see right side up or from right to left. Some have shown that improper teaching methods are extremely important. Again, lack of fusion in which the retinal image of one eye is confused with the other because of muscle impairment or some other ocular defect may be significant. Bad home or school conditions, both patent and latent, may lie behind the emotional upset, which in turn may not be readily apparent to the inexperienced examiner.

A diagnosis of this condition and an analysis of its cause would have to be made on the basis of careful ophthalmic and physical examination, an analysis of the history by a psychiatrist who is skilled in dealing with reading disabilities and who is familiar with child behavior disturbances, in addition to a psychologic study by a psychologist who is a specialist in "corrective reading." The treatment usually is a matter of reeducation after any obvious cause has been removed, and this reeducation brings into account the use of kinesthesia both of the tongue and of the general body musculature. Home trial and error methods of correction are not only contraindicated but may actually cause emotional and other disturbances which may be worse than the immediate disorder, but it must not be forgotten that a condition of this sort may correct itself, although this is not usually the case. This means that it is better to neglect the problem than to "finker." It must be remembered that this type of condition can occur in children of 9 or even younger as an attention-gaining mechanism and that it often requires a careful analysis of the emotional milieu of the child to see what the situation is that lies behind it. It would be advisable for the physician, if he has time, to check over some of the references in Marion Monroe's book "Children Who Cannot Read" dealing with this problem. Perhaps there is a large school system not too distant where there is a reading specialist who can give immediate advice.

#### SENSITIVITY TO BLOOD AND SERUM

*To the Editor:*—As an intern in 1931 I observed in the dispensary that occasionally I would develop a more or less severe localized skin reaction, with redness, itching and burning, to the blood of certain patients. The reaction did not occur always even though in some cases the blood was allowed to remain for some time; in other cases, itching would call my attention almost at once to blood stains, usually on the inner surface of the arm. I was interested in the phenomenon and thought that I might at some time investigate it thoroughly. My attention has again been called to this idea of allergic reaction by two rather recent cases of atypical reaction following blood transfusions. One occurred in a tuberculous patient, almost immediately after transfusion, as an acute pulmonary edema; the other happened not long afterward to another patient with traumatic hemothorax as a fairly typical asthma, several hours after blood transfusion, and responded to atropine sulfate (ephedrine was not given for fear of raising the blood pressure). Can you tell me whether anything has been done in the line of skin sensitivity to blood? It seems that there are other incompatibilities besides that disclosed by blood grouping and cross agglutination. I have talked with several pathologists and they said that the idea was entirely new to them.

MARGARET F. BENJAMIN, M.D., Muncie, Ind.

*ANSWER.*—Positive skin reactions to human blood serum with a positive complement fixation reaction was reported by György and Witebsky (*München. med. Wchnschr.* 50:599, 1924) in one case. The two specimens of blood were of the same group. One blood transfusion caused no trouble. The second blood transfusion, twenty days later, was followed by a severe anaphylactic reaction, which however, was not fatal. The authors believe that the child was sensitive to some substance present in the serum itself or to some food present in the serum to which the child was sensitive. It is barely possible that the inquirer may be highly skin sensitive, without necessarily having clinical symptoms, to certain foods that may be present at various times in sufficient concentration in the serums with which she has come in contact to produce skin reactions. This assumption is highly speculative, as there is great dilution of such foods by the blood serum.

Regarding the second part of the inquiry, it is not stated whether the donors were merely typed or whether compatibility tests were done in addition. Occasional reactions may occur when universal donors (group O) have a very high titer of agglutinins or hemolysins in their serum, so that dilution by the recipient's blood is insufficient. A similar reaction may occur in universal recipients (group AB) when the donor's serum may be unusually high in agglutinins of hemolysins, so that dilution in the recipient's blood is insufficient.

In addition, one must consider the possibility of the presence in the donor's blood of "extra agglutinin 1." This was discovered in occasional bloods of groups O, A and B by Landsteiner and Levine. It is demonstrable when compatibility tests are done at temperatures of from 25 to 30 C. They may not be detected when tests are done at room temperature. Fortunately, reactions do not occur at a temperature above 30 C. The subject of anomalous agglutinins is however still under investigation, and occasional reactions occur which are not explainable by our present knowledge.

Reactions of an allergic nature may occur if the donor, previous to the transfusion, has ingested some foods to which the recipient is sensitive (Duke and Stoffer: *M. Clin. North America* 7:1523, 1924). In addition, it may be possible to

induce a state of passive sensitization by transfusing the blood of an allergic individual. The recipient may develop a reaction in the presence of the antigen. If, for instance, the blood of a cottonseed sensitive patient is used, the recipient may in a few hours develop symptoms from contact with a cotton filled mattress.

Reactions may also be due to citrated blood, to foreign matter present in the transfusion apparatus, either in the glass connections or in the rubber tubing, or to incipient coagulative changes in the blood as it passes through the apparatus (Satterlee, H. S., and Hooker, R. S.: Transfusion of Blood with Special Reference to the Use of Anticoagulants, *THE JOURNAL*, Feb. 26, 1916, p. 618).

#### DOSAGE OF BROWN MIXTURE FOR COLD

*To the Editor:*—Will you kindly send me a prescription of brown mixture for cold for an adult and state how often it must be taken? Also a prescription of brown mixture for children from 2 to 4 years old and how they must take it, as I am interested in a good formula of brown mixture.

THOMAS GAERSTE, M.D., Curaçao, Dutch West Indies.

*ANSWER.*—The formula for brown mixture or the compound mixture of opium and glycyrrhiza is to be found in the U. S. P. XI. Its composition is as follows:

Fluidextract of glycyrrhiza.....	120	cc.
Antimony and potassium tartrate.....	0.24	cc.
Camphorated tincture of opium.....	120	cc.
Spirit of ethyl nitrite.....	30	cc.
Glycerin.....	120	cc.
Distilled water.....	a sufficient quantity to make	1,000 cc.

While the dose of this mixture for an adult is a teaspoonful every two to four hours, one may give a child one or two drops of it for each year of age every two hours.

It should be understood, however, that it is not a cure for a cold in any sense of the word. It may, if taken with an abundance of fluid, tend to improve the secretion of the affected mucous membrane. It may lessen the violence of coughing; but, as colds are infections, the patient's system must acquire immunity. Toward immunization this medicine contributes nothing.

#### USE OF CAMPHOR IN OIL TO SUPPRESS LACTATION

*To the Editor:*—A white woman, aged 26, single, had a criminal abortion two years ago. The menstrual history is normal. Ever since the abortion the patient has observed a milky, watery discharge from the breasts, which is quite profuse at times. The breasts are not painful, or enlarged. The Wassermann reaction is negative. Physical and pelvic examinations are negative. Can you give me any suggestions as to the treatment for this condition? Please omit name. M.D., New York.

*ANSWER.*—Camphor in oil administered intramuscularly has a definite inhibiting effect on lactation. This effect appears to be due to a direct action of the drug on the secretory epithelium of the breasts. For the suppression of milk either immediately after the birth of a stillborn child or later when a child is weaned, L. G. McNeile (*West. J. Surg.* 43:61 [Feb.] 1935) recommends that on the first day two 1½ grain (0.1 Gm.) doses of camphor in oil be injected intramuscularly, one in the morning and the other at night. On the second, third and fourth days one hypodermic of the same amount is given in the morning. If the breasts show any evidence of active function after the fourth day, an injection is given on the fifth and sixth days also. Since there is no harm in administering this form of therapy, it should be tried in the present case.

#### AGE OF LOSS OF POTENCY—MENOPAUSE

*To the Editor:*—1. What is the average age of beginning loss of libido or beginning impotence in males, without venereal history? 2. What is the average age at which women are considered past the childbearing age?

M.D., New York.

*ANSWER.*—1. Normally the absence of libido and impotence should coincide, but this is by no means always the case. The trouble is when the libido continues but the power for connection is lost. In both conditions the onset is gradual and may be said to start at the age of 65. This age is the average age, but it is nothing unusual for men to be sexually active at 70, 80 or even later. Pathologically of course, even in the absence of any venereal disease, conditions may appear at early ages.

2. As a rule to which there are exceptions, women do not become pregnant after the menopause. Statistics from those who have investigated this point in hundreds of cases seem to indicate that in the United States the menopause comes on at the age of 50. Different countries and different races vary greatly in this regard.

## ARTIFICIAL FEEDING OF INFANTS

*To the Editor:*—Is it the common practice of pediatricians in the United States to arrange the formula of bottled-fed infants so that they are given whole (cow's) milk at 5 months of age? I am assuming in this question that the infant must be put on the bottle from birth.

LEON PARIS, M.D., Bronx, New York.

**ANSWER.**—A normal, full term, bottle fed infant requires from  $1\frac{1}{2}$  to a maximum of 2 ounces of cow's milk per pound of body weight in twenty-four hours and a total fluid requirement of 3 ounces per pound of body weight. This means that the average 5 months old infant will receive from 24 to 30 ounces of cow's milk in twenty-four hours. The usual infant of this age will take five bottles of 7 ounces each, or a total of 35 ounces, which necessitates the adding of from 11 to 5 ounces of boiled water to the milk. Whole cow's milk is ordinarily not prescribed before the latter part of the first year, as gastric and intestinal digestion are usually not adequate for undiluted milk before this time.

## URTICARIA

*To the Editor:*—A patient has severe urticaria and I have had no success whatever with the many known prescriptions. Suffice it to say that I have tried all therapy that is listed in the attempt to abort such a condition. I shall be grateful if you will suggest or furnish me any data that you have at your disposal. In addition, I shall be grateful for any intravenous or intramuscular medication that may be attempted in just such an affliction. I am most anxious to abort this condition. I may add that the patient has been previously diagnosed by another man as having petit mal and is a daily user of one tablet of phenobarbital. Does the latter bear any relation to the urticaria? If so, would it be advisable to substitute elixir of phenobarbital?

BENEDICT B. BACKLEY, M.D., Jacksonville, Ohio.

**ANSWER.**—Phenobarbital may be suspected as a possible cause of the urticaria. A patch test with phenobarbital might give some information as to its status in producing the eruption. If it is responsible for the dermatosis, the elixir of phenobarbital will produce the same effect. Intramuscular injections of epinephrine solution and intravenous injections of calcium gluconate solution or of the patient's own blood are worth trying.

## TREATMENT OF EPIDIDYMITIS

*To the Editor:*—A man with acute gonorrhea has had prostatitis and unilateral epididymitis. His symptoms have improved until there is only slight tenderness in the epididymitis and in the prostate. A moderate discharge is still present. How soon will it be safe to attempt the passing of sounds? How often should the prostate and seminal vesicles be massaged? Please omit name.

M.D., Iowa.

**ANSWER.**—Unless the patient has a stricture there is little reason for passing sounds in this case. Routine massage of the prostate and vesicles, followed by an instillation of a mild silver nitrate solution, should not be started until about two weeks after the swelling in the epididymis and acute symptoms have subsided. This massage should not be vigorous at first and should be carried out at intervals of from five days to one week.

## TREATMENT OF PITIRIASIS ROSEA

*To the Editor:*—What is the present accepted treatment for pityriasis rosea? Is ultraviolet radiation of any value in this condition? Please omit name.

M.D., Iowa.

**ANSWER.**—Pityriasis rosea is a self-limited disease, but in the majority of instances its course can be definitely shortened by the use of mild erythema exposures of ultraviolet rays at intervals of from five to seven days, plus soothing local treatment. The latter may consist of applications of calamine lotion, calamine liniment or boric acid ointment, or 5 per cent boric acid in rose water ointment. For scaling lesions, from 2 to 3 per cent salicylic acid may be added to the ointments.

## EFFECTS OF MYDRIATICS

*To the Editor:*—An optometrist in this city is claiming that permanent blindness was caused in a case in which "drops" were used in the eyes, presumably homatropine or atropine 1 per cent. Is this possible? Please omit name.

M.D., North Carolina.

**ANSWER.**—Permanent blindness can follow the use of a mydriatic only in case glaucoma was present at the time of administration or some form of glaucoma resulted from the drops and did not receive or respond to adequate treatment. There are no recorded instances of blindness due to the use of a mydriatic without the intervention of increased intra-ocular pressure.

## Medical Examinations and Licensure

## COMING EXAMINATIONS

## STATE AND TERRITORIAL BOARDS

ALABAMA: Montgomery, June 29-July 1. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

ALASKA: Juneau, March 2. Sec., Dr. W. W. Council, Juneau.

ARIZONA: Phoenix, Jan. 5-6. Sec., Dr. J. H. Patterson, 826 Security Bldg., Phoenix.

ARKANSAS: *Medical (Regular)*. Little Rock, May 11-12. Sec., State Medical Board of the Arkansas Medical Society, Dr. A. S. Buchanan, Prescott. *Medical (Eclectic)*. Little Rock, May 11. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock.

CALIFORNIA: *Reciprocity*. San Francisco, Jan. 6. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

COLORADO: Denver, Jan. 5. Sec., Dr. Harvey W. Snyder, 422 State Office Bldg., Denver.

CONNECTICUT: *Basic Science*. New Haven, Feb. 13. *Prerequisite to license examination*. Address State Board of Healing Arts, 1895 Yale Station, New Haven. *Medical (Homeopathic)*. Derby, Feb. 13. Sec., Dr. Joseph H. Evans, 1488 Chapel St., New Haven. *Medical (Regular)*. Hartford, March 9-10. *Endorsement*. Hartford, March 23. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden.

DELAWARE: Dover, July 13-15. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, Dover.

DISTRICT OF COLUMBIA: Washington, Jan. 11-12. Sec., Commission on Licensure, Dr. George C. Ruhland, 203 District Bldg., Washington.

IDaho: Boise, April 6. Commissioner of Law Enforcement, Hon. Emmett Pfost, 205 State House, Boise.

ILLINOIS: Chicago, Jan. 26-28. Superintendent of Registration, Department of Registration and Education, Mr. Homer J. Byrd, Springfield.

INDIANA: Indianapolis, June 22-24. Sec., Board of Medical Registration and Examination, Dr. William R. Davidson, 301 State House, Indianapolis.

IOWA: *Basic Science*. Des Moines, Jan. 12. Sec., Prof. Edward A. Benbrook, Iowa State College, Ames.

MAINE: Portland, March 9-10. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton, 192 State St., Portland.

MICHIGAN: Ann Arbor and Detroit, June 9-11. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 202-3-4 Hollister Bldg., Lansing.

MINNESOTA: *Basic Science*. Minneapolis, Jan. 5-6. Sec., Dr. J. Charney McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. *Medical*. Minneapolis, Jan. 19-21. Sec., Dr. Julian F. Du Bois, 350 St. Peter St., St. Paul.

MONTANA: Helena, April 6. Sec., Dr. S. A. Cooney, 7 W. 6th Ave., Helena.

NEBRASKA: *Basic Science*. Omaha, Jan. 12-13. Director, Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NEVADA: *Reciprocity*. Carson City, Feb. 1. Sec., Dr. John E. Worden, Carson City.

NEW HAMPSHIRE: Concord, March 11-12. Sec., Board of Registration in Medicine, Dr. Charles Duncan, State House, Concord.

NEW JERSEY: Trenton, June 15-16. Sec., Dr. James J. McGuire, 28 W. State St., Trenton.

NEW MEXICO: Santa Fe, April 12-13. Sec., Dr. Le Grand Ward, Box 693, Santa Fe.

NEW YORK: Albany, Buffalo, New York and Syracuse, Jan. 25-28. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, 315 Education Bldg., Albany.

NORTH DAKOTA: Grand Forks, Jan. 5-8. Sec., Dr. G. M. Williamson, 4½ S. 3rd St., Grand Forks.

OREGON: Portland, Jan. 5-7. Sec., Dr. Joseph F. Wood, 509 Selling Bldg., Portland.

PENNSYLVANIA: Philadelphia, Jan. 5-9. Sec., Board of Medical Education and Licensure, Mr. James A. Newpher, Education Bldg., Harrisburg.

PUERTO RICO: San Juan, March 2. Sec., Dr. O. Costa Mandry, Box 536, San Juan.

RHODE ISLAND: Providence, Jan. 7-8. Chief, Division of Examiners, Mr. Robert D. Wholey, 366 State Office Bldg., Providence.

SOUTH DAKOTA: Pierre, Jan. 19-20. Dir., Division of Medical Licensure, Dr. B. A. Dyar, Pierre.

VERMONT: Burlington, Feb. 10-12. Sec., Board of Medical Registration, Dr. W. Scott Nay, Underhill.

WASHINGTON: *Basic Science*. Seattle, Jan. 7-8. *Medical*. Seattle, Jan. 11-13. Dir., Department of Licenses, Mr. Harry C. Huse, Olympia.

WEST VIRGINIA: Charleston, March 1. Sec., Public Health Council, Dr. Arthur E. McClue, State Capitol, Charleston.

WISCONSIN: Madison, Jan. 12-14. Sec., Dr. Henry J. Gramling, 2203 S. Layton Blvd., Milwaukee.

WYOMING: Cheyenne, Feb. 1. Sec., Dr. G. M. Anderson, Capitol Bldg., Cheyenne.

## NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II*. Feb. 9-11, May 10-12, June 21-23, and Sept. 13-15. *Part III*. New York, Jan. 11-13 and Chicago, Jan. 19-21. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

## SPECIAL BOARDS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written examination for Group B applicants* will be held in various cities throughout the country, April 17. *Oral examinations for Group A and B applicants* will be given in Philadelphia, June 7-8. Sec., Dr. C. Guy Lane, 416 Marlborough St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written examination* will be held simultaneously in different centers of the United States and Canada in March. *Practical examination* will be given in St. Louis in April and at Philadelphia in June. Chairman, Dr. Walter L. Bierring, 406 Sixth Ave., Rm. 1210, Des Moines.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written examination for Group B applicants* will be held in various cities throughout the United States and Canada, March 6. *Practical, oral and clinical examinations for Group A and B applicants* will be held at Atlantic City, N. J., June 7-8. *Applications must be received at least sixty days prior to the examination dates.* Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).

AMERICAN BOARD OF OPHTHALMOLOGY: Los Angeles, Jan. 23. Sec., Dr. John Green, 3720 Washington Blvd., St. Louis, Mo.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Cleveland, Jan. 9. Sec., Dr. Fremont A. Chandler, 180 N. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Philadelphia, June 7-8. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PATHOLOGY: Chicago, March 26-27. Sec., Dr. F. W. Hartman, Henry Ford Hospital, Detroit, Michigan.

AMERICAN BOARD OF PEDIATRICS: New York, Jan. 23. Sec., Dr. C. A. Aldrich, 723 Elm St., Winnetka, Illinois.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: New York, Dec. 29-30. Sec., Dr. Walter Freeman, 1028 Connecticut Ave., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: Atlantic City, June 4-6. Sec., Dr. Byrl R. Kirklin, Mayo Clinic, Rochester.

### Wisconsin June-July Report

Dr. Robert E. Flynn, former secretary, Wisconsin State Board of Medical Examiners, reports the written and practical examination held in Milwaukee, June 30-July 3. The examination covered 19 subjects and included 100 questions. An average of 75 per cent was required to pass. Ninety candidates were examined, 89 of whom passed and 1 failed. Thirty-one physicians were licensed by reciprocity. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
College of Me	.....	(1935)	82
Loyola Univ	.....	(1932)	81
Northwestern	.....	(1935)	84
84, 87, (1936) 82, 84, 84, 85	.....		
Rush Medical College	.....	(1936)	81
83, 85, 85, 86, 87	.....		
School of Medicine of the Division of the Biological Sciences	.....	(1935)	84
University of Illinois College of Medicine	.....	(1936)	82
83, 86, 87	.....		
University of Louisville School of Medicine	.....	(1935)	83
Tulane University of Louisiana School of Medicine	.....	(1935)	79
Howard University School of Medicine	.....	(1927)	85
..... School of Medicine	.....	(1935)	83
..... School of Medicine	.....	(1934)	86
Marquette University School of Medicine	.....	(1935)	89
(1936) 77, 80, 80, 81, 81, 81, 82, 82, 83, 83, 83, 83, 83, 83, 83, 84, 84, 84, 85, 85, 85, 85, 85, 85, 86, 86, 86, 86, 86, 87, 88, 89	.....		
University of Wisconsin Medical School	.....	(1933)	83
(1935) 80, 81, 81, 81, 82, 82, 83, 83, 83, 84, 84, 85, 85, 85, 86, 86, 86, 86, 87, 88	.....		
Friedrich-Alexanders-Universität Medizinische Fakultät, Erlangen	.....	(1923)*	87
Osteopathst	.....	83, 84, 88	

School	FAILED	Year Grad.	Per Cent
Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin	.....	(1924)*	74

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
College of Medical Evangelists	.....	(1934)	California
Chicago Medical School	.....	(1929)	Illinois
Loyola University School of Medicine (1929)	.....	(1931)	Illinois
Northwestern University Medical School	.....	(1929), (1930)	Illinois,
.....	.....	Illinois, (1934)	California
.....	.....	(1935)	Illinois
University of Maryland School of Medicine and College of Physicians and Surgeons (1916)	.....	S. Carolina, (1930)	Penna.
University of Michigan Medical School	.....	(1930), (1932)	Michigan
University of Minnesota Medical School	.....	(1930), (1933, 2)	Minnesota
Washington University School of Medicine	.....	(1933)	Missouri
University of Nebraska College of Medicine	.....	(1934)	Nebraska
Temple University School of Medicine	.....	(1931)	Minnesota
University of Pennsylvania School of Medicine	.....	(1923)	Penna.
Vanderbilt University School of Medicine	.....	(1931)	Tennessee
Marquette University School of Medicine	.....	(1934)	Minnesota
University of Wisconsin Medical School	.....	(1934)	Penna.
Osteopathst	.....	Iowa, Missouri, New York, South Dakota	

\* Verification of graduation in process.

† Licensed to practice osteopathy and surgery.

### Missouri Reciprocity and Endorsement Report

Dr. E. T. McGaugh, state health commissioner, reports 22 physicians licensed by reciprocity and 5 physicians licensed by endorsement at the meeting held in Jefferson City, Aug. 11, 1936. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Howard University College of Medicine	.....	(1932)	Maryland
Northwestern University Medical School	.....	(1929)	Illinois
Indiana University School of Medicine	.....	(1927)	W. Virginia
State University of Iowa College of Medicine	.....	(1935)	Iowa
University of Kansas School of Medicine	.....	(1931), (1932), (1933, 2), (1934, 2), (1935, 3)	Kansas

University of Louisville School of Medicine	.....	(1935, 3)	Kentucky
Detroit College of Medicine and Surgery	.....	(1933)	Michigan
University of Nebraska College of Medicine	.....	(1935)	Nebraska
University of Cincinnati College of Medicine	.....	(1936)	Ohio
University of Oklahoma School of Medicine	.....	(1935)	Oklahoma
Jefferson Medical College of Philadelphia	.....	(1923)	Penna.
University of Tennessee College of Medicine	.....	(1933)	Tennessee

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
University of Arkansas School of Medicine	.....	(1935)	N. B. M. Ex.
Washington University School of Medicine	.....	(1927), (1931), (1933)	N. B. M. Ex.
Meharry Medical College	.....	(1934)	N. B. M. Ex.

## Book Notices

**A Text-Book of Neuro-Anatomy.** By Albert Kuntz, Ph.D., M.D., Professor of Micro-Anatomy in St. Louis University School of Medicine. Second edition. Cloth. Price, \$6. Pp. 519, with 307 illustrations. Philadelphia: Lea & Febiger, 1936.

This work has been thoroughly revised. The anatomic details are correlated with the fundamental structural plan of the vertebrate nervous system. The anatomic structure of the parts of the human nervous system are discussed in the light of the present knowledge of phylogenetic, anatomic and physiologic relationships. There are twenty-six chapters, starting with evolution and comparative anatomy of the nervous system and concluding with a brief laboratory outline. Embryology, topography, histology, anatomy and physiology of the entire cerebrospinal, peripheral and autonomic nervous systems are clearly discussed and interpreted. The autonomic nervous system included in this book comprises material from the first five chapters of the author's book on the autonomic nervous system. The discussion of the cerebral hemispheres is brilliant because of its extreme comprehensiveness and clarity, and the ability to make interesting reading. In fact, the entire book is written in a concise and clear cut maner, thus making it a desirable textbook for students as well as for medical men interested in neurology. It is highly recommended.

**Osnovy morfologii nervnoy sistemy v normalnom i patologicheskom sostoyaniyakh.** Tom I: Obshchaya normalnaya i patologicheskaya gistologiya; gliya i mezoderma. [By] L. I. Smirnov. [Morphology of Nervous System in Normal and Pathologic Conditions. Volume I: General Normal and Pathologic Histology; Glia and Mesoderm.] Boards. Price, 18 rubles. Pp. 360, with 238 illustrations. Kharkov: Gosmedizdat U. S. S. R., 1935.

In a short preface the author states that in the Soviet Republics the interest in neuropathology has become of late so great that there is hardly a neuropsychiatric establishment without a properly equipped histopathologic laboratory. Psychiatric institutes are being gradually equipped with necropsy rooms, and the growing number of research neuropsychiatric centers attracts numerous young physicians eager to work in the field of pathology. In the introduction (thirty-six large pages of small print) the author enlarges on the importance of neuropathology in general, without the knowledge of which, he justly states, there can be no progress in the intelligent understanding of neuropsychiatric problems. Unfortunately, he did not spare efforts to exaggerate the shortcomings of neuropathology or to enlarge on the difficulties associated with its studies, such as the necessity of extensive clinical observations and of a previous training in anatomy, physiology, histology, embryology and other allied sciences. The picture painted by the author is so bewildering that the young men to help whom the book has been written may become discouraged from taking up the study of neuropathology. Even more discouraging is the mode of presenting the subject. Thus, while the book contains an immense amount of valuable information, the arrangement of the material is loose and therefore confusing. Discussing glia, for instance, the author is not satisfied with a detailed general description of the various forms of glial elements and the methods of their study but does not hesitate to take up in detail the numerous morbid conditions (including gliomas) in which abnormal glia is encountered. It would be better to refer to the special volume and thus avoid repetitions, which are numerous. The author thinks it equally important to describe the condition of the glia found in an old dog or to discuss in four pages the minute types of granules occurring in glia. Even such topics as the nature and origin of rod cells do not require seven pages (including four pictures). On the

other hand, such an important subject as that of secondary nerve degeneration is given about half a page. The reading is rendered more difficult because of frequent quotations from the German and occasionally Russian medical literature. German quotations are so numerous that the impression is gained that one is reading the verbose contributions of Spielmeier and Jakob, which are quoted with especial frequency. Non-German authors are mentioned only when their publications happened to appear in German, though the author gives the English caption of Cushing and Bailey's book on classification of gliomas (but this also appeared in a German translation). The book may be looked on as a review of or a compilation from German and Russian writings on various topics of neuropathology and for this reason may be of some help as a reference book. The illustrations, though numerous, are for the most part worthless because of the poor quality of the paper.

Annual Reprint of the Reports of the Council on Pharmacy and Chemistry of the American Medical Association for 1935, with the Comments that Have Appeared in The Journal. Cloth. Price, \$1. Pp. 139. Chicago: American Medical Association, 1935.

The contents of the 1935 volume of collected reports of the Council fall roughly into three classifications: preliminary and special reports, reports on the omission of products from New and Nonofficial Remedies, and reports on products held non-acceptable for N. N. R. The medicinal products concerned thus fall respectively into the following groups: products which have been considered and found promising but not as yet fully acceptable, products which have been accepted but have not continued to meet the standards of acceptability, and products which on initial or continued consideration have been found definitely unacceptable. It is understood, of course, that the term "acceptable" implies that the product has sufficient value or promise of value to be used by the general medical profession and further that it is marketed in accordance with the Council's rules.

The Council's preliminary reports cover the first line of therapeutic advance. In general these reports give a review of the evidence for products representing the latest therapeutic investigation and indicate the procedure and requirements necessary for their ultimate admission to the physician's armamentarium. In this volume the report on progynon-B touches on the active and promising field of ovarian hormone therapy and the report on vitamin A and urinary lithiasis sets up a warning sign in the chaotic no man's land of overenthusiastic claims for vitamin therapy. An additional pronouncement in this field is found in the report on shotgun vitamin therapy. The Council is indeed to be commended for its rational stand in its attempt to clear up the mists of pseudoscience that have invaded this field.

The reports on articles omitted from New and Nonofficial Remedies usually give a parting notice to products on the way to the therapeutic scrap heap. The reports on lithium salts and tyramine hydrochloride are excellent examples of this type. The report on rossium, on a bacillus acidophilus culture and on dinitrophenol should also be noted as dealing with products that have been tried and found wanting.

It is significant that reports on products which on first examination are found flagrantly unacceptable comprise less and less of the bulk of the Council's work. They are represented in this volume by such reports as that on Elixir Aurine, an apparently uncontrolled mixture of gold tribromide and ephedrine for use in the treatment of whooping cough; Ho-Mo-Sol, a solution of sodium hypochlorite and sodium carbonate representing an unessential modification of a standard hypochlorite solution, marketed under a noninformative proprietary name and promoted to the public; the Imbak products, which are apparently bacterial preparations of undeclared composition, marketed with absurdly comprehensive claims, and Sulfoin, an ointment of solution of sulfuretted lime marketed under a proprietary name with inadequately supported therapeutic claims.

One is tempted to mention each one of the valuable reports included in this volume, but the limits of a review must be observed. Attention must, however, be called to the reports on omission from New and Nonofficial Remedies of Caprokol and Hexylresorcinol Solution S. T. 37 as illustrative of the judicial fairness and careful procedure of the Council on Pharmacy and Chemistry of the American Medical Association.

Les kystes hydatiques de la rate. Par L. Sabadini, chirurgien des hôpitaux d'Alger. Préface du Professeur Costantini. Paper. Price, 32 francs. Pp. 200, with 82 illustrations. Paris: Masson & Cie, 1936.

Sabadini's monograph on hydatid cysts of the spleen lives up to the tradition of the French school and the publishing house of Masson & Cie. In a clear and analytic manner the author goes into the greatest detail in his discussion of a lesion that is rare even in hydatid disease and seen only in regions where the echinococcus is endemic. In fact, Sabadini introduced his discussion of the subject by saying that only about 2 to 4 per cent of hydatid cysts become localized in the spleen. It is rarely reported from Iceland and Australia, being more commonly seen in Algiers and Italy. The chapters are on incidence, history, pathogenesis, pathology, symptomatology and signs, diagnosis and treatment. References are numerous throughout the monograph and it closes with a complete bibliography listing 288 articles and making the monograph desirable for this reason alone. The most valuable chapter by far is the one on treatment, which is subdivided under the headings of indications and operative procedures. The author clearly and logically brings out the complicating factors of enormous size, dangers of anaphylaxis, massive adhesions, dangers of spreading the parasites into the peritoneum and secondary infection, which have to be considered in the individual case in choosing marsupialization, removal of the cyst with primary closure or splenectomy. The indications and contraindications with the detailed technic are given clearly and succinctly. Coming from a surgeon of wide experience in Algerian hospitals, this chapter is noteworthy and adds an individual and personal note to the monograph with its complete bibliography.

A Diabetic Manual for Practitioners and Patients. By Edward L. Bortz, A.B., M.D., F.A.C.P., Associate Professor of Medicine, Graduate School of Medicine, University of Pennsylvania. With a foreword by George Morris Piersol, B.S., M.D., F.A.C.P., Professor of Medicine, Graduate School of Medicine, University of Pennsylvania. Fabrikoid. Price, \$2. Pp. 222, with 12 illustrations. Philadelphia: F. A. Davis Company, 1936.

This little volume is intended both for the practitioner and for the patient, a combination that is always difficult to manage. It is bound to become too technical for the patient. Such a book, of which this is an example, contains too many technical terms that are foreign to a layman in spite of the glossary of medical terms at the beginning of the book. It contains too much that is neither of interest nor of use to the patient and tends to confuse him rather than to clarify the problem for him. From the standpoint of the patient therefore it is top heavy. From the standpoint of the practitioner, it is an excellent little volume, full of practical type of information. Any one in busy practice will find a good guide here in the treatment, diagnosis and complications of diabetes. In the chapter on diet the author has used a new and simple method of measuring in place of the usual weighing of the food, which is a practical and helpful method as it simplifies the routine and is adequate for all practical purposes. The chapter on food analysis and recipes follows much the usual lines and to this are added lists of the composition of alcoholic beverages, a helpful feature for reference.

An Introduction to Surgery. By Rutherford Morison, M.D., F.R.C.S., M.A., and Charles F. M. Saut, C.B.E., M.D., M.S., Professor of Surgery, Cape Town University, South Africa. Third edition. Cloth. Price, \$5. Pp. 367, with 231 illustrations. Baltimore: William Wood & Company, 1935.

This rather small volume is devoted to the establishment of general principles as applied to the teaching of surgery. The authors point out that deviations from normal health are due to changes in the body caused by external or internal stimuli, which may be divided into two main groups: noninfective—mechanical, thermal, chemical, electrical, x-ray—and infective. A proper understanding of surgery consists in an understanding of how these harmful stimuli or irritants affect the body and how nature overcomes these changes. These facts constitute the general principles and the authors in this textbook are concerned with the presentation of these principles and their constant, forceful repetition and illustration by cases. The volume is not a complete textbook of surgery. The subjects taken up include shock, hemorrhage, infection, inflammation, wounds, inflammatory fever, effects of interference with blood supply

of tissues, suppuration, specific infectious diseases, ulcers, gangrene, syphilis, tuberculosis, malignant disease, the hollow muscular systems, the serous cavities, natural cures and indications for operation. It ends with a chapter on pathologic conditions illustrating the principles of surgery: consideration of etiology, pathology, symptomatology, diagnosis and treatment. The work contains nothing that is essentially new and it could not be used as a textbook on general surgery, it is so incomplete; but it must have been found of value to warrant its third edition. The authors are men of large experience and high standing, and their manner of presenting surgical principles is interesting and valuable. Their aim and their achievements are to aid the student in thinking out for himself the problems presented to him clinically and in textbooks, placing each problem in a general group rather than considering it as an isolated entity. Once the student has gained such a point of view, he ceases to be overwhelmed by the mass facts presented to him, thinks systematically and logically, and finds greater interest in the subjects.

**The Therapeutic Agents of the Pyrrole and Pyridine Group Including the Tropolol, Scopolamine, Ecgonine, and Granatoline Derivatives. The Relation Between Their Chemical Constitution and Pharmacologic Action.** By W. F. von Oettingen, M.D., Ph.D., Director of the Haskell Laboratory of Industrial Toxicology, Wilmington, Delaware. Cloth. Price, \$4.75. Pp. 258. Ann Arbor, Michigan: Edwards Brothers, Inc., 1936.

This volume is a real contribution to scientific literature because it represents a collection of chemical and pharmacologic data on several series of nitrogen-containing organic compounds. The subtitle on the fly leaf indicates that the volume discusses "The Relation Between Their Chemical Constitution and Pharmacologic Action." Unfortunately, this is not the case. In the last paragraph the author indicates that he recognizes no such relationship, but he suggests that the relationship may be established when a greater fund of knowledge of physico-chemical properties and reactions is at hand.

The chemistry consists in giving the names of the compounds according to *Chemical Abstracts* nomenclature, portraying the structural formulas, which are given in great effusion and without arguments for or against, and for some compounds a few physical properties. Methods of isolation and preparation are not given. The volume would be more valuable to the chemist if the chemical data were more complete. The pharmacologic data are more complete than the chemical and are necessarily factual in nature. It must be pointed out that the size of the volume would soon get out of control if these subjects were treated more completely. From the pharmacologist's point of view the bibliography is excellent; from the chemist's it is incomplete. This volume and *Die Chemie des Pyrrols* by Dr. Hans Fischer and Dr. H. Orth would be complementary, as the one deals with pharmacology and the other with chemistry.

The format of the book will be welcomed. The printing process is photolithograph on a not too expensive paper. The binding appears to be well done but again with inexpensive materials. In this economical setup the printing is very legible, being clear, large and not crowded and, in addition, structural formulas and tables are not spared. Many scientifically valuable books may become financially possible if some such economical format becomes accepted.

**Pathology of the Nervous System: A Student's Introduction.** By J. Henry Biggart, M.D., Pathologist to the Scottish Asylums' Board. Foreword by Professor A. Murray Drennan, M.D., F.R.C.P. Cloth. Price, \$5.25. Pp. 335, with 204 illustrations. Baltimore: William Wood & Company, 1936.

This is written clearly and briefly and yet includes almost every entity one deals with in neuropathology. The author has succeeded in keeping together the relationship of the etiology to the pathology of each disease described. There is also a closer correlation between general pathology and the pathology of the nervous system than is found in most textbooks. The illustrations are excellent. The book is divided into fourteen chapters, on the nerve cells, the interstitial cells, the cerebrospinal fluid, vascular disease and the brain, acute bacterial infections, chronic infections, virus diseases, diseases of unknown etiology, intoxication and deficiency diseases, degenerative diseases, injuries to the nervous system, tumors of the glioma group, and errors in development. There is a small bibliography, but the works mentioned are in the

English language. This book is recommended to medical students as well as to those interested in the pathology of the central nervous system.

**Grundriss der Inneren Medizin.** Von A. von Dörmann, a. o. Professor an der Universität Berlin. Tenth edition. Cloth. Price, 16.80 marks. Pp. 681, with 63 illustrations. Berlin: Julius Springer, 1936.

The first edition of this textbook of internal medicine appeared in 1923. The author is a pupil of the clinician and teacher Friedrich Müller. He has written this book on internal medicine as a guide to the young physician and medical student. He devotes 130 pages to the infectious diseases. Then follow circulatory diseases (seventy-three pages), respiratory diseases (sixty pages), blood diseases (twenty-five pages), diseases of the digestive tract (112 pages), of the urinary tract (fifty-two pages) and of the ductless glands (twenty pages), metabolic diseases (forty-eight pages) and diseases of the locomotor apparatus (twelve pages) and the nervous system (124 pages). The book has more information than most textbooks of its size, as a considerable portion is printed in small type. Some of the illustrations are in colors. The textbook is an excellent and concise outline of our present knowledge of internal diseases.

**Bailey's Text-Book of Histology** (Elwyn and Strong). Revised and rewritten by Philip E. Smith, Ph.D., Editor, Professor of Anatomy, College of Physicians and Surgeons, Columbia University, and others. Ninth edition. Cloth. Price, \$6. Pp. 773, with 506 illustrations. Baltimore: William Wood & Company, 1936.

The present revision is a cooperative undertaking of five members of the Anatomy Department of Columbia University College of Physicians and Surgeons. They have kept before them the fundamental idea that this was to be a textbook for students rather than a source book for teachers and research workers. They have endeavored to discuss the physiologic significance of the numerous structures described. The various revisers were assigned to those chapters in which they are most interested. The chapter on the central nervous system, written by Dr. Oliver Strong, which was revised in the last edition, remains unchanged. Some chapters have been entirely rewritten and many others have been brought down to date. This edition is well illustrated and a few of the illustrations are in colors.

**Experimental Enzyme Chemistry.** By Henry Tauber, Ph.D., New York Homeopathic Medical College and Flower Hospital, New York, N. Y. Fabrikoid. Price, \$3.50. Pp. 118. Minneapolis: Burgess Publishing Company, 1936.

This volume includes a number of highly technical essays on the chemistry of the enzymes under the following chapter headings: Physical Chemistry of the Enzymes; Esterases; Proteolytic Enzymes and Peptidases, Mammalian Gastric Proteases, Trypsins, Peptidases; Amidases; Carbohydrases, Sucrase (Saccharase, Invertase), Glucosidases, Maltases, Galactosidases, Lactase, Melibiase, "Emulsion," Polyases, Lichenase, Cellulase, Inulase; Catalase; Oxidizing Enzymes, Dehydrogenases or Anaerobic Oxidases, Oxidases or Aerobic Oxidases; The Flavine Oxidation System of Warburg and Christian and Its Relation to Other Dyes; Carbonic Anhydrase; The Zymase Complex and Alcoholic Fermentation; Luciferase. For all those interested in research in this field, it may be of special value; for the general reader, it is, of course, a book of reference.

**Über die Ursache und Entstehung des Krebses: Zugleich eine Anleitung zur Erschliessung des Zellbildes bösartiger Geschwülste.** Von Prof. Dr. med. Jos. Koch. Paper. Price, 32 marks. Pp. 302, with 32 illustrations. Jena: Gustav Fischer, 1936.

This monograph summarizes the results of Koch and his pupils on the protozoic etiology of cancer. Based on the examination of 260 human cancers and on transplantable animal cancers, he concludes that cancer is due to a protozoic organism, "cellula cancerosa specifica s. parasitoia," which enters through the intestinal and female genital tracts. "All phenomena in carcinoma, as manifold as they may be, can be related easily to one cause: the presence of the parasitic cell, and they can be satisfactorily explained by this." He discusses extensively the objections which have already been made in the literature and which, in most instances, are based on the conception of the wrong interpretation of degenerated products in cancer material, as parasitic specific cells. "To the chaos of

indecisive opinions and uncertain imaginations, I oppose my interpretation, which is able to relate the cytologic pictures to a uniform cause, namely, the existence of an exogenic protozoic cell parasite, and to interpret the pictures completely." In spite of the great amount of work and the excellent microscopic pictures (mostly colored), this book, written perhaps with honest enthusiasm but certainly without scientific criticism, will not solve the problem of the etiology of cancer. It particularly does not add any new information to further the still unsettled question of a relationship of living organisms to carcinogenesis.

**Exercises After Delivery or Operation.** By Walter B. Mount, M.D., Obstetrical Department, Mountinside Hospital, Montclair, N. J. Paper. Pp. 6, with illustrations. Privately printed, 1935.

In this booklet the author describes and illustrates a few conventional exercises for patients to take shortly after a delivery or operation. He promises his patients who carry out these exercises faithfully that they will the sooner regain their girlish figure.

## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Hospital Records as Privileged Communications.**—The defendant insurance company issued in April 1932 a policy on Vermillion's life, which was not to take effect if on the date of its delivery the insured was not in sound health. Vermillion died Nov. 14, 1932. When his beneficiary brought suit on the policy the company denied liability, claiming that at the time of the delivery of the policy the insured was "suffering from latent syphilis, chronic heart disease, swelling ankles, lues, nephritis, shortness of breath, cough frequency, and nocturia, and had been suffering from said ailments and was under the care of physicians for a long time prior" thereto and that as a result thereof the insured died of "heart disease and syphilis." To prove this it sought to introduce into evidence a case history made when the insured was admitted to a hospital about seven weeks after the delivery of the policy. The trial court excluded the hospital records proffered. Judgment was subsequently rendered in favor of the beneficiary and the insurance company appealed to the St. Louis (Missouri) court of appeals.

The defendant contended that the hospital records sought to be admitted in the trial court were admissible in evidence because they were kept in compliance with a Missouri statute (sec. 9056, R. S. Mo. 1929), requiring persons in charge of hospitals, public or private, to make a record of all the personal and statistical particulars relative to the inmates in their institutions. There is no doubt, answered the court of appeals, that hospital records, properly identified and shown to be kept pursuant to this statute, are admissible in evidence. However, the admissibility of such records may be affected by another statute (sec. 1731, R. S. Mo. 1929), which provides that a physician or surgeon shall be incompetent to testify "concerning any information which he may have acquired from any patient while attending him in a professional character, and which information was necessary to enable him to prescribe for such patient as a physician, or do any act for him as a surgeon." The defendant argued, however, that the trial court was not justified in assuming that the records were privileged merely on the assertion of counsel for the plaintiff that the information contained in those records was privileged and without proof of any kind being offered in support of that assertion.

It is true, said the court, that the mere assertion of the privilege, without any showing of facts or circumstances from which the court can determine the necessity for the application of the statute under which the privilege is claimed, is not sufficient to warrant a court in rejecting the proffered evidence or testimony. Nor is the mere relationship of physician and patient alone sufficient to warrant a court in rejecting, on the ground of privilege, evidence which would otherwise be competent. In the present case, however, the relationship of physician and patient and the fact that the information contained

in the case history was obtained by virtue of that relationship were sufficiently shown on the face of the case history itself to warrant the court in excluding it as a privileged communication. While it is true that the first page of the case history is not signed by any physician, such a signature was not necessary as a basis for the claim of privilege. The entries constituted a prima facie showing that the information was of a confidential and privileged character. If, as claimed by the insurance company, such information was not given by the patient to the hospital physicians for the purpose of enabling them to prescribe for the patient, then the burden was on the insurance company to produce evidence to satisfy the court to that effect and to overcome the prima facie showing of the confidential character of the information appearing therein.

In Missouri, continued the court of appeals, hospital records containing information obtained by a physician from a patient for the purpose of enabling him to treat or prescribe for the patient are as fully privileged as would be the testimony of the physician himself concerning such information, provided the privilege has not been waived by the party asserting it. The court was of opinion that the evidence contained in the case history was of a confidential nature acquired from the patient by the physician in charge of the hospital, or by physicians acting for him, for the purpose of enabling such physicians to treat the patient in the hospital, and that the trial court was warranted in rejecting such evidence. The judgment in favor of the beneficiary was accordingly affirmed.—*Vermillion v. Prudential Ins. Co. of America (Mo.)*, 93 S. W. (2d) 45.

**Workmen's Compensation Acts: Pneumonia Not an "Injury by Accident."**—Slade, after working indoors in an exceedingly hot environment, made several trips outdoors. That evening he became ill and on the following day his attending physician made a diagnosis of "consolidated pneumonia," which the physician testified was "due to sudden change of temperature, going from the hot room out into the open air. It produced a congestive chill." Slade died six days later and his widow instituted proceedings under the North Carolina workmen's compensation act. An award of compensation made by the industrial commission in her favor was reversed by the superior court, Cabarrus county, and the widow appealed to the Supreme Court of North Carolina.

The North Carolina workmen's compensation act, said the Supreme Court, provides compensation for death only where death results from an injury by accident arising out of and in the course of the employment. Death from injury by accident implies a result produced by a fortuitous cause. In the present case, said the court, there was no evidence of any accidental injury arising out of and in the course of employment which resulted in the death of the employee. Compensation was therefore properly denied the widow.—*Slade v. Willis Hosiery Mills (N. C.)*, 184 S. E. 844.

## Society Proceedings

### COMING MEETINGS

- American Academy of Orthopedic Surgeons, Cleveland, Jan. 11-13. Dr. Philip Lewin, 55 East Washington St., Chicago, Secretary.
- American Orthopsychiatric Association, New York, Feb. 18-20. Dr. George S. Stevenson, 50 West 50th St., New York, Secretary.
- Annual Congress on Medical Education, Medical Licensure and Hospitals, Chicago, Feb. 15-16. Dr. William D. Cutter, 535 North Dearborn St., Chicago, Secretary.
- Eastern Section, American Laryngological, Rhinological and Otolological Society, Boston, Jan. 7. Dr. D. C. Jarvis, Quarry Bank Bldg., Barre, Vt., Chairman.
- Middle Section, American Laryngological, Rhinological and Otolological Society, Chicago, Jan. 11. Dr. Alfred Lewy, 25 East Washington St., Chicago, Chairman.
- Mid-Western Section, American Laryngological, Rhinological and Otolological Society, Chicago, Jan. 11. Dr. Frederick A. Figi, 436 Tenth Ave. S.W., Rochester, Minn., Chairman.
- Society of American Laryngologists, Rhinologists and Otolologists, Baldwin, College of Agriculture, University of Wisconsin, Madison, Wis., Dec. 28-30. Dr. I. L. Baldwin, College of Agriculture, University of Wisconsin, Madison, Wis., Secretary.
- Society of Surgeons of New Jersey, Newark, Jan. 6. Dr. Walter B. Mount, 21 Plymouth St., Montclair, Secretary.
- Southern Section, American Laryngological, Rhinological and Otolological Society, Memphis, Tenn., Jan. 13. Dr. Charles D. Blessingame, Physicians and Surgeons Bldg., Memphis, Tenn., Chairman.
- Western Section, American Laryngological, Rhinological and Otolological Society, San Diego, Calif., Jan. 30-31. Dr. David R. Higbee, 3245 Fourth Ave., San Diego, Calif., Chairman.

## Current Medical Literature

### AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers in continental United States and Canada for a period of three days. Periodicals are available from 1926 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them. Titles marked with an asterisk (\*) are abstracted below.

#### California and Western Medicine, San Francisco

45: 305-376 (Oct.) 1936

- Tumors and Cysts of Lung: Diagnostic Methods. J. J. Singer, St. Louis.—p. 313.  
Medical Survey of One Thousand Work Relief Persons: Certified for Work Relief in San Francisco: Period Oct. 2 to 19, 1935. A. E. Larsen, San Francisco.—p. 317.  
Mapharsen: Its Use in Treatment of Syphilis. H. E. Miller, N. N. Epstein and R. G. Simpson, San Francisco.—p. 321.  
\*Portal Thrombosis. E. C. Pallette, Los Angeles.—p. 324.  
Obstetric Anesthesia. La Verne Wright, San Francisco.—p. 328.  
Tests for Vasomotor Control. L. K. Gay and J. T. Hardesty, San Francisco.—p. 331.  
Hypertension: Its Surgical Approach. F. M. Findlay, Santa Barbara.—p. 334.  
Medical Management of Peptic Ulcer. G. A. Cochran, Salt Lake City.—p. 340.  
Irritant Factors in Tobacco Smoke. E. Bogen, Olive View.—p. 342.  
\*New Sign Found in Transverse Lesions of Spinal Cord. W. J. Kerr and C. A. Noble Jr., San Francisco.—p. 346.  
Meditations on Some Present-Day Medical Problems. A. C. Siefert, Oakland.—p. 348.  
The Management of Alcoholism. H. H. Wilson, Los Angeles.—p. 349.

**Portal Thrombosis.**—Pallette discusses thrombosis of the portal venous system from the standpoint of etiology, symptomatology, frequency, pathologic physiology and treatment. The condition is too infrequently recognized as a clinical entity. The acute condition may closely simulate an abdominal emergency, and in the chronic form the associated splenomegaly should not be regarded as successfully amenable to surgical treatment. Unfortunately there is no treatment of any essential value in this condition. In acute cases the usual procedures for the treatment of shock, ileus and the like are instituted. In his own case the author felt that perhaps the repeated injections of intraspinal procaine hydrochloride given in the hope of relieving the marked ileus present was of considerable value and perhaps definitely influenced the outcome toward recovery. The basis for this opinion is that, in relieving the critical distention of involved intestine, the already embarrassed circulation to that loop is relieved. The huge ascites can be controlled by paracentesis. In the chronic cases, instructions should be given as to the avoidance of all alcoholic beverages or of any drug toxic in any way to the liver.

**New Sign in Transverse Lesions of Spinal Cord.**—In 1930 Kerr first noticed in a patient with a somatic sensory level due to a probable cord tumor that there was a change of the skin that could be felt. The skin above this level, which may be designated as normal, felt smooth, soft, moist and pliable and could be readily lifted between the thumb and forefinger. On the other hand, the skin below the level seemed stiff, "hide bound," dry and adherent to the subcutaneous layers, so that only with difficulty could a layer of skin be pinched together. It was found that this change could be sensed also by gently trying, with the tips of the extended fingers, to displace a segment of skin on its underlying tissues. Sometimes in patients studied subsequently the transition from normal to altered skin was abrupt, sometimes more gradual over one or two segments. Since 1930 Kerr and Noble have examined about 100 patients in the University of California Hospital and the San Francisco Hospital. The patient was usually in ignorance of the presence of any such level. Sixty-four subjects were examined presumably as normal controls. There were twenty patients with a somatic sensory level and other convincing evidence of disease of the spinal cord. Their diagnoses included both intramedullary and extramedullary tumors, transverse myelitis of degenerative or inflammatory origin, diffuse arachnoiditis and fracture of the spine. In these patients a level of skin tension was found

which was in fairly close agreement, either with that somatic sensory level or, more often, with a level of change in sweating or pilomotor response. In ten of these twenty patients the level of the process in the cord was confirmed by operation or necropsy or, in the case of spinal fracture, by roentgen examination. In nine of these ten the level of skin tension corresponded exactly with the area of disease and in one case pointed to a tumor five segments higher in the cord than indicated by the somatic sensory level. In this patient, whose first laminectomy had ended in a fruitless search for the lesion, operation confirmed the suggestion of a higher level of skin tension. In ten patients with evidence of disease of the spinal cord with a somatic sensory level, no level of skin tension could be demonstrated. That this sign might affect the halves of the body differently is shown by two patients. In one of these patients there was a unilateral hypertonus of the skin associated with marked constriction of the peripheral vessels on the same side, secondary to a cerebral lesion in the opposite hemisphere. A similar observation was made in a patient with a nearly complete Brown-Séquard syndrome due to a fracture of the cervical spine.

#### Colorado Medicine, Denver

33: 737-856 (Nov.) 1936

- The Syphilis Problem: How Shall We Meet It? H. N. Cole, Cleveland.—p. 750.  
Protamine Insulinate at Colorado General Hospital: Clinical and Experimental Investigations. J. J. Waring, B. B. Longwell and A. Ravin, Denver.—p. 757.  
Forty Years of Progress in Medicine. J. L. Wicks, Evanston, Wyo.—p. 821.

#### Iowa State Medical Society Journal, Des Moines

26: 549-602 (Oct.) 1936

- Meningitis. A. L. Hoyne, Chicago.—p. 549.  
\*Mandelic Acid in Treatment of Bacilluria: Its Advantages Over Ketogenic Diet. B. G. Budge, Ames.—p. 553.  
Injection Treatment of Hernia. C. H. Johnston, Des Moines.—p. 556.  
Regional (Distal) Ileitis. F. W. Mulsow, Cedar Rapids.—p. 561.  
The Woman Physician in a Changing World. Florence Brown Sherbon, Lawrence, Kan.—p. 564.  
Study of 198 Cases of Female Genital Malignant Tumors. J. H. Randall, Iowa City.—p. 567.  
Use of Trichloroacetic Acid to Obliterate Bleeding Points on Nasal Septum. F. G. Murphy, Mason City.—p. 571.  
Encephalography in Children. Charlotte Fisk, Iowa City.—p. 572.  
Lymphogranuloma Inguinale. L. J. Dimsdale, Sioux City.—p. 574.

26: 603-664 (Nov.) 1936

- Recent Advances in Diagnosis and Treatment of Vulvovaginal Discharges (Bloodless). H. C. Hesselstine, Chicago.—p. 603.  
Some Observations on Third Antigen of Bacillus Typhosus. W. J. Moore, Iowa City.—p. 610.  
Rocky Mountain Spotted Fever. F. Montz, Lowden.—p. 614.  
Some Factors in the Management of the Failing Heart. A. G. Felter, Van Meter.—p. 617.  
Fractures of Vertebra. V. A. Ruth, Des Moines.—p. 620.  
Modern Trends in Psychoneurotic Reaction Types. W. Malamud, Iowa City.—p. 625.  
Refinements in Refraction. F. W. Dean, Council Bluffs.—p. 632.  
Improved Mechanics in Maggot Therapy. J. J. Duffy, Denison.—p. 636.

**Mandelic Acid in Treatment of Bacilluria.**—From July 1935 to September 1936 Budge has treated forty-six cases of bacilluria with mandelic acid and ammonium chloride with such satisfactory results that the ketogenic diet has been discontinued. There has been one known recurrence in a young woman who discontinued treatment against instructions. In a man, aged 43, there was the severe complication of hemorrhage with acute retention, probably from the false passage of a sound in an attempt to dilate a stricture; however, he was relieved of symptoms. With mandelic acid, as with the ketogenic diet, best results are obtained with a highly acid urine. Mandelic acid is readily taken and well tolerated by children. Success with the ketogenic diet in children can rarely be attained in the home. It is not necessary to hospitalize a child to administer mandelic acid. The standardized ketogenic diet can be readily prepared in any home; the patient when away must depend on eggs and 40 per cent cream, but mandelic acid can be carried in the grip. The patient who is placed on the ketogenic diet is told that he may expect to become sick on the second day and often it is necessary to stop the diet temporarily because of persistent nausea. The longer mandelic acid is taken, the better it is tolerated. The ketogenic diet is contraindicated in diabetes, angina, biliary tract disturbances and in elderly people with arteriosclerosis, but mandelic acid can be used in these conditions.

**Journal of Biological Chemistry, Baltimore**

115: 593-808 (Oct.) 1936

- Proteolytic Enzymes: XI. Specificity of Enzyme Papain Peptidase I. M. Bergmann, L. Zervas and J. S. Fruton, New York.—p. 593.
- Origin of Urinary Creatinine. A. Goudsmit Jr., New York.—p. 613.
- Glycogen Disappearance and Carbohydrate Oxidation in Hypophysectomized Rats. R. E. Fisher, St. Louis; Jane A. Russell, and C. F. Cori, St. Louis.—p. 627.
- Deuterium as Indicator in Study of Intermediary Metabolism: VII. Studies in Bile Acid Formation. R. Schoenheimer, D. Rittenberg, B. N. Berg and L. Rousselot, New York.—p. 635.
- Comparison of Glycine and Guanidoacetic Acid as Precursors of Creatine. M. Bodansky, with technical assistance of Virginia B. Duff and C. L. Herrmann, Galveston, Texas.—p. 641.
- Partition of Reduced Ascorbic Acid in Blood. D. J. Stephens and Estelle E. Hawley, Rochester, N. Y.—p. 653.
- Additional Observations on Anemia Caused by Deaminized Casein. A. G. Hogan, R. E. Guerrant and W. S. Ritchie, Columbia, Mo.—p. 659.
- Chemical Studies on Virus of Tobacco Mosaic: VII. Improved Method for Preparation of Crystalline Tobacco Mosaic Virus Protein. W. M. Stanley, Princeton, N. J.—p. 673.
- Further Studies on Calcium Content of Body in Relation to Calcium and Phosphorus Content of Food. L. B. Whitchee, Lela E. Booher and H. C. Sherman, New York.—p. 679.
- Effect of Liberal Intakes of Calcium or Calcium and Phosphorus on Growth and Body Calcium. E. W. Toepfer and H. C. Sherman, New York.—p. 685.
- Some Aspects of Protein Intake in Relation to Growth and Rate of Calcification. R. T. Conner and H. C. Sherman, New York.—p. 695.
- New Essential Dietary Factor. C. A. Elvehjem, C. J. Koehn Jr. and J. J. Oleson, Madison, Wis.—p. 707.
- Spatial Configuration of  $\alpha$ -Amino- $\beta$ -Hydroxy- $\gamma$ -Butyric Acid. C. E. Meyer and W. C. Rose, Urbana, Ill.—p. 721.
- Improved Method for Preparation of Xylulose and Ribulose. P. A. Levene and R. S. Tipson, New York.—p. 731.
- Effect of Dinitrophenol on Metabolism of Frog Muscle. Ethel Ronzoni and Ellen Ehrenfest, St. Louis.—p. 749.
- Remarks on Paper by Tendeloo on New and Easy Method for Potentiometric Determination of Calcium Concentrations in Solutions. D. M. Greenberg and C. E. Larson, Berkeley, Calif.—p. 769.
- Further Observations on Chemical Nature of Hematopoietic Substance Occurring in Liver. H. D. Dakin, New York; C. C. Ungley, Newcastle-on-Tyne, England, and R. West, Scarborough-on-Hudson, N. Y.—p. 771.

**Laryngoscope, St. Louis**

46: 731-814 (Oct.) 1936

- Genetics in Otosclerosis. Helen F. Schick and M. A. Goldstein, St. Louis.—p. 731.
- Selection and Operation of Audiometers. E. G. Witting, Abington, Pa.—p. 747.
- Maxillary Sinusitis with Complicating, Spreading Osteomyelitis, Brain Abscess and Death: Report of Case. A. N. Lemon, Philadelphia.—p. 754.
- Lingual Thyroid. L. T. Buckman, Wilkes-Barre, Pa.—p. 765.
- Tuberculosis Associated with Esophageal Obstruction. H. P. Mosher, Boston.—p. 785.
- \*Suggested Routine Technic for Emergency Tracheotomy. W. B. Chamberlin, Cleveland.—p. 800.

**Technic for Emergency Tracheotomy.**—Chamberlin declares that the Mosher tube answers the problem of relief of sudden and acute laryngeal obstruction. Its ease of introduction in either the erect or the reclining posture leaves nothing to be desired, while its lumen gives ample space for free respiration while the tracheotomy is being performed. The technic in the main is the same as that used in the introduction of an intubation tube, except that there is no introducer to be removed. The forefinger of the left hand is carried over the base of the tongue until the tip of the epiglottis is felt. In children it is much better to feel for the arytenoids, which are distinguished as two small lumps on the flexor surface of the index finger. This prevents the tube from slipping into the esophagus. The tube is carried along the flexor surface of the index finger until its point is directly above the opening of the larynx. The handle or proximal end is elevated and the tip, guided by the finger, is pushed gently through the larynx and into the trachea. After the tube has been introduced, it is held in position by a nurse or assistant to see that it is neither coughed out nor displaced. The patient is then placed in the usual position for the tracheotomy. Before the trachea is opened, all bleeding is carefully controlled and the field inspected to see that it is perfectly dry. The trachea is opened either between the rings or by cutting directly across one of them. In older patients in whom larger tubes are used it is generally advisable to resect a portion of the ring to prevent undue pressure from the tube. This piece should be firmly grasped with forceps or hemostat to prevent aspiration. A

blunt hook is then inserted through the opening and the trachea is drawn slightly upward. When the trachea is opened the convex surface of the Mosher tube, rather than the end, is usually brought into view. The tube is slightly withdrawn until the end appears above the first hook. Two other hooks are inserted, one on each side, and the tracheotomy tube is placed in position and firmly tied behind the neck. Two or more skin sutures may be necessary; also a small drain immediately above and below the tube to take care of superficial and late bleeding. The Mosher tube is then withdrawn.

**Medical Annals of District of Columbia, Washington**

5: 287-322 (Oct.) 1936

- Constitutional Factors in Mental Disorders. W. Freeman, Washington.—p. 287.
- \*Traumatic Epilepsy with Cortical Scar: Diagnosis and Results of Operation in Twenty Cases. S. N. Rowe, Philadelphia, and J. W. Watts, Washington.—p. 298.
- New York City Plans for Combating Syphilis. C. W. Clarke, New York.—p. 301.
- Tuberculosis of Larynx. R. Reynolds, Washington.—p. 306.
- William Cline Borden (1858-1934). D. L. Borden, Washington.—p. 310.

**Traumatic Epilepsy with Cortical Scar.**—Rowe and Watts relate the diagnostic features of their twenty cases of traumatic epilepsy with a cortical scar. All the patients had received severe head injuries prior to the onset of epilepsy. There was loss of consciousness for many hours and often for many days. Emergency operations for elevation of depressed fractures and débridement had been performed in several instances. Bone defects, obvious both from clinical and from roentgen examination, were present in 65 per cent of the patients. Laceration of the dura was found at operation in 35 per cent. Focal features of the convulsive seizures were observed in 60 per cent of the patients. Neurologic signs indicative of focal cerebral damage were present in 85 per cent. These varied from slight defects in the visual fields to partial hemiparesis. Of the fifteen patients in whom encephalograms were made, observations indicative of cerebral cicatrix were present in thirteen. There was an interval of fourteen years in two of the patients between the injury and the first convulsion, of thirteen years in one patient and of twelve years in another. The shortest period between injury and the first attack was three months and the next shortest was seven months. Excision of the cortical scar resulted in only slight, temporary or no improvement in 35 per cent of the patients, whereas 15 per cent were entirely relieved of attacks, and an additional 50 per cent showed marked improvement. The fact that 65 per cent of the patients were definitely benefited seems to justify removal of the cortical scar in attacking what is otherwise a hopeless condition.

**Military Surgeon, Washington, D. C.**

79: 341-422 (Nov.) 1936

- The United States Army Medical Department 1861 to 1865. F. B. Ryons.—p. 341.
- Partial List of Medical Men in the Maritime Service of Colonies During the American Revolution. L. H. Roddis.—p. 357.
- Outbreak of Typhoid Fever in Camp of Civilian Conservation Corps. A. N. Tasker.—p. 358.
- Mess Economy. J. W. Shuman.—p. 362.
- Why the Flight Surgeon? W. S. Jensen.—p. 367.
- The Surgical Hospital. L. E. Hetrick, New York.—p. 372.
- Spontaneous, Intraoperative Rupture of Urinary Bladder with Recovery: Case. J. Betha, A. P. Kelly and R. E. Bitner.—p. 379.
- Dissemination of Cholera by the 38th Infantry in 1867. G. F. Lull.—p. 382.
- Carbon Monoxide Poisoning. H. T. Berwald.—p. 386.
- Method of Initiating Pneumothorax in the Tropics. R. B. Skinner.—p. 396.

**New England Journal of Medicine, Boston**

215: 693-742 (Oct. 15) 1936

- Relationship of Psychiatry to Medicine. W. A. Bryan, Worcester, Mass.—p. 693.
- Blood Iodine Level, Before and After Subtotal Thyroidectomy for Hyperthyroidism. H. J. Perkin and L. M. Hurxthal, Boston.—p. 698.
- Acute Gastro-Intestinal Disease in Infants. R. M. Smith, Boston.—p. 701.
- Surgical Diseases of Alimentary Tract in Infants. W. E. Ladd, Boston.—p. 705.
- Diuretics and What They Do. H. A. Christian, Boston.—p. 709.
- Progress in Gastro-Enterology for 1935. E. S. Emery Jr., Boston.—p. 712.

## Pennsylvania Medical Journal, Harrisburg

40:1-62 (Oct.) 1936

- A Charge to Keep: Presidential Address. M. Lick, Erie.—p. 1.  
Recognition of Therapeutic Use of Oxygen by Dr. George E. Holtzapfel.  
C. M. Byrnes, Baltimore.—p. 8.  
Treatment of Primary Hydrocele by Injection of Sodium Morrhuate.  
E. S. Krug, McConnellsburg.—p. 9.  
Modern Dietetics in Disorders of Kidney and Genito-Urinary Tract.  
R. S. Reeves, Philadelphia.—p. 10.  
\*Clinical Significance of Hoarseness. A. J. Wagers, Philadelphia.—p. 14.  
Chronic Compression of the Heart: By One Who Had This Condition.  
V. P. Pisula, Everson.—p. 18.  
Pneum in Lung with Severe Complications: Report of Case. J. G.  
Koshland, Lewistown.—p. 20.  
Medical Aspects of Social Hygiene in Montgomery County, Pa. R. A.  
Vonderlehr, Lida J. Usilton, Washington, D. C., and Helen Cole  
Carter, Norristown.—p. 21.

**Clinical Significance of Hoarseness.**—Wagers admonishes that hoarseness, particularly if unaccompanied by pain or a cough, is too often ignored by the patient and sometimes by the physician as well until such time as other and more alarming symptoms appear. Every case of hoarseness does not indicate a grave constitutional disease. But no matter how trivial the appearance of hoarseness may seem, it should always be regarded seriously. The immediate cause of hoarseness is found in various conditions affecting the proper functioning of the vocal cords. It becomes then the problem of the laryngologist to discover the immediate and if possible the remote or constitutional cause underlying and responsible for the local laryngeal manifestation. In all cases a careful and complete history should be the basis of the investigation, followed by inspection of the larynx, physical examination of the chest, roentgen study of the chest and the larynx, Wassermann test, and in certain instances microscopic study of removed laryngeal tissue. Frequently hoarseness or some other voice change is one of the first signs of pulmonary tuberculosis. Hoarseness may be and often is the first symptom indicating malignant invasion of the larynx. Nonmalignant neoplasms are frequently seen within the larynx. Most of those causing hoarseness are in close relation to the vocal cords themselves—either within the cord, projecting from its free margin, or located at the anterior commissure. Although many cases of hoarseness may be due to the presence of laryngeal tumors, malignant or benign, or to syphilis, tuberculosis and paralysis of different laryngeal muscles, it is not to be assumed that there is no such thing as simple acute or chronic catarrhal laryngitis. Cases of the former are often seen. They are usually of short duration and the result of various exciting causes. With the removal of the cause and rest of the voice, hoarseness quickly disappears in most instances. The simple chronic form of laryngitis is usually produced by long continued vocal abuse.

## Psychiatric Quarterly, Albany, N. Y.

10: 531-736 (Oct.) 1936

- Macroscopic Staining of the Brain: Aid in Visual Teaching of Normal and Morbid Neuro-Anatomy. F. M. Kramer, New York.—p. 533.  
Autocatharsis as Therapeutic Measure: Report of Case. J. A. Brussel, Brentwood, N. Y.—p. 552.  
\*Cerebral Toxic Pericapillary Hemorrhage (Brain Purpura). M. Helfand and I. N. Wolfson, Poughkeepsie, N. Y.—p. 575.  
Modifications of Behavior Consequent to Cerebral Lesions. K. Goldstein, New York.—p. 586.  
Simultaneous Psychoses Occurring in Business Partners: Case Report. H. B. Lang, Brentwood, N. Y.—p. 611.  
Technical Approaches Used in Study and Treatment of Emotional Problems in Children: Part I. The Story, a Form of Directed Phantasy. J. Louise Despert and H. W. Potter, New York.—p. 619.  
Pathogenic Effect of Emotional Shock. P. Milici, Kings Park, N. Y.—p. 639.  
Clinical Study of Effect of Benzadrine Therapy on Self-Absorbed Patients. E. Davidoff, Syracuse, N. Y.—p. 652.  
Dream Structure and Intellect. H. S. Barahal, Kings Park, N. Y.—p. 660.  
Trends of Mental Disease in New York State. B. Malzberg, New York.—p. 667.

**Cerebral Toxic Pericapillary Hemorrhage.**—Helfand and Wolfson report a case of purpura of the brain that developed in the course of arsenamine treatment. Statistical studies reveal its presence once in every 1,500 treated cases and its

expectancy is one out of every 36,000 injections. The microscopic observations indicate that purpura of the brain may represent the end result of a series of causes entering more or less simultaneously into action. Some of the causes may be of a predisposing nature and others of a precipitating nature. In the authors' case the presence of chronic encephalitis and chronic alcoholism probably played the part of predisposing factors, which fact upholds Jakob's contention that in many cases of pericapillary hemorrhage one finds chronic syphilitic vascular changes or other preexisting vascular inadequacies. Alcohol and encephalitis may have determined the area of minor resistance. Arsenic must have played the part of a precipitating agent and may have acted both by damaging the endothelial lining elements of the small blood vessels and by producing through toxic mechanisms a damage of the perivascular tissue, thus creating one of the most essential factors in determining a hemorrhage of the brain; i. e., the presence of angiovascular and perivascular necrosis. To what extent chronic alcoholism is responsible for areas of demyelination is difficult to answer owing to the fact that both alcoholism and arsenical intoxication may result in the production of similar areas of demyelination. The term cerebral toxic pericapillary hemorrhage is preferred to encephalorrhagia, as it implies the suspected pathogenic mechanism of a toxic action in contrast to other forms of pericapillary hemorrhages in which hypertension and other factors may play an important part.

## Public Health Reports, Washington, D. C.

51: 1429-1454 (Oct. 16) 1936

- Lysine and Malignant Growth: I. Amino Acid Lysine as Factor Controlling Growth Rate of Typical Neoplasm. C. Voegtlin and J. W. Thompson.—p. 1429.  
Id.: II. Effect on Malignant Growth of Gliadin Diet. C. Voegtlin and Mary E. Maver.—p. 1436.

51: 1489-1532 (Oct. 30) 1936

- \*Selenium Problem in Relation to Public Health: Preliminary Survey to Determine Possibility of Selenium Intoxication in Rural Population Living on Seleniferous Soil. M. I. Smith, K. W. Franke and B. B. Westfall.—p. 1496.

**Selenium Problem in Relation to Public Health.**—Smith and his co-workers made a survey of the rural population of parts of Wyoming, South Dakota and Nebraska to determine the possibility of selenium intoxication through the ingestion of locally produced selenium-bearing foodstuffs. A series of 111 families was studied for clinical evidence of selenium intoxication, and a series of 127 specimens of urine of as many subjects, representing ninety families, was analyzed for this element. The results of the urinary analysis showed that only 8 per cent of the cases were free or nearly free of selenium, while 92 per cent contained amounts varying from 2 to 133 micrograms of selenium per hundred cubic centimeters. This affords definite proof of the absorption of selenium by some of the rural population in the foregoing states. In the 111 families visited, the following disorders, exclusive of the more vague symptoms of anorexia, indigestion, general pallor and malnutrition, were observed: 1. Bad teeth, varying from marked discoloration through all stages of decay, were seen in one or more members of forty-eight families. 2. Yellowish discoloration of the skin, in many cases a very definite icterus, and in some cases seemingly associated with more or less definite liver disease, was seen in about forty-six subjects. 3. Skin eruptions of varying degrees of severity, but not conforming to any one particular type, were seen in twenty subjects. 4. Chronic arthritis with more or less permanent changes in the joints was present in fifteen subjects, varying from the milder types of rheumatoid arthritis to the more severely deforming type of arthritis deformans. 5. Diseased nails of the fingers, and in some cases also of the toes, were observed in eight subjects. They were usually symmetrical, atrophic, brittle and irregular and often presented transverse and at times longitudinal ridging. 6. Subcutaneous edema of probably cardiorenal origin was diagnosed in five cases, and peripheral neuritis of doubtful etiology in two subjects. Fifteen subjects gave a history of more or less protracted gastro-intestinal disturbances.

## FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

## British Journal of Experimental Pathology, London

17: 335-430 (Oct.) 1936

- \*Studies in Diphtheria Toxin Production: I. Effect of Iron and Copper. A. M. Pappenheimer Jr. and Sylvia J. Johnson.—p. 335.  
Id.: II. Production of Potent Diphtheria Toxin on Simple Amino Acid Medium. A. M. Pappenheimer Jr.—p. 342.  
Interpretation of Growth Fluctuations in Transplantable Tumors. F. R. Selbie.—p. 344.  
Susceptibility to Tumor Growth in Rats. F. R. Selbie.—p. 348.  
Studies on Neurotropic Rift Valley Fever Virus: Susceptibility of Rodents. R. D. Mackenzie, G. M. Findlay and Ruby O. Stern.—p. 352.  
Immunity Reactions of Iodoproteins. I. Snapper and A. Grunbaum.—p. 361.  
\*Alteration in Bactericidal Power of Blood in Presence of Inflammation. W. H. Hughes.—p. 369.  
Some Properties of Capsule of Pasteurella Septica. F. W. Priestley.—p. 374.  
Influence of Certain Bacterial Fractions Derived from Bacteria Aertrycke on Oxygen Uptake of Rabbit Brain and Muscle Suspensions. M. E. Delafield and H. A. Smith.—p. 379.  
Antibacterial Immunity to Infection with Hemolytic Streptococci in Rabbits. T. C. Stamp.—p. 391.  
Centrifugation Studies: I. Critical Examination of New Method as Applied to Sedimentation of Bacteria, Bacteriophages and Proteins. W. J. Elford.—p. 399.  
Id.: II. Viruses of Vaccinia, Influenza and Rous Sarcoma. W. J. Elford and C. H. Andrewes.—p. 422.

**Diphtheria Toxin Production.**—Pappenheimer and Johnson were led to reinvestigate the effect of inorganic salts on toxin production by the accidental observation that the yield of diphtheria toxin produced on infusion-free peptone medium increased by more than 100 per cent when Fernbach flasks made of soft glass were used instead of the usual pyrex glass. It was thought that this stimulation of toxin formation might be due to the copper or iron content of the soft glass, and these metals were accordingly studied in detail. The variation in toxin production from flask to flask, from one batch of medium to another, and the frequent inability of one laboratory to produce toxin on mediums recommended by others, may often be attributed to the variation in the concentration of iron salts in mediums and flasks. The amount of iron necessary to prevent diphtheria toxin formation is considerably less than the amount found in normal tissues. It is therefore significant that all methods for preparing toxin mediums involve the removal of a flocculent precipitate formed in alkaline solution. Excess iron is presumably removed at this point. All mediums giving a visible color test for iron with dipyrindine have failed to produce any diphtheria toxin. It has often been claimed that no relationship exists between growth and toxin production; however, if the inorganic salt concentration is suitably controlled, a relationship may be found.

**Bactericidal Power of Blood in Presence of Inflammation.**—Hughes observed that the bactericidal power of normal blood does not fall in vitro within six hours. The blood of patients with active bacterial disease shows a steady loss of bactericidal power. Normal persons, when given vaccine, show a similar change during the stage of reaction. Blood drawn during a rigor shows one of two changes: if it is drawn at the beginning of the rigor, there is a constant low level of bactericidal power without further loss on standing; if it is drawn later, it shows a bactericidal power below normal and a progressive loss in vitro. Blood drawn after the rigor is normal. A mixture of serum taken from a patient with active bacterial disease or with an artificially produced reaction and normal blood cells shows a constant low bactericidal power with no further deterioration. The hypothesis that a toxic substance is present in the blood of patients having certain diseases, which, when it is first liberated, exerts an inhibitory effect on the bactericidal power both of normal corpuscles and of the patient's own corpuscles would appear to account for these results. The nature of the substance is at present unknown; it has been impossible to initiate the gradual loss of power by adding known substances to the drawn blood; e. g., bacterial toxin, autolyzed bacteria, filtrate of pus, or histamine. When a change followed the addition of any of

these substances, it was a reduction once for all of the bactericidal power, similar to the effect of the patient's serum on normal corpuscles or of the onset of rigor. This suggests that two factors may be responsible for the gradual deterioration of certain bloods, one the toxic action of a substance liberated during the inflammatory reaction, the other an adjustment of the body to that substance. The best indication of the presence of the substance in the patient's blood was his general condition; some indication is given by the temperature, the deterioration usually being shown if this is raised.

## British Medical Journal, London

2: 699-744 (Oct. 10) 1936

- Spontaneous Pneumothorax. R. A. Young.—p. 699.  
Substances Promoting Normal and Abnormal Growth. J. Needham.—p. 701.  
Polyavitaminosis and Asulfurosis. E. J. Wright.—p. 707.  
\*Hodgkin's Disease and Deep X-Ray Therapy. W. L. Watt.—p. 712.  
Indications for Infant Circumcision, with Notes of Simpler Operation. F. Welsh.—p. 714.

**Hodgkin's Disease and High Voltage Roentgen Therapy.**—Watt reviews 201 cases of Hodgkin's disease treated from 1923 to 1934. General medical treatment is extremely important throughout the whole course of the disease. Arsenic should not be given during or until six weeks after a course of irradiation. Surgical removal of glands except for emergencies appears to be of no permanent value. Ordinary x-rays act well as long as the glands are localized and superficial. Cases so treated respond afterward to high voltage irradiations just as well as untreated cases. High voltage roentgen therapy is recommended because the response to treatment is much quicker, and by varying the voltage and filtrage to suit the glands to be treated one can in a short time treat masses of glands no matter where they are situated. For superficial glands a voltage of from 160 to 170 kilovolts is sufficient, combined with aluminum filters or the equivalent of from 5 to 6 mm. thickness. A depth dose of 60 per cent of the skin erythema dose is usually enough. The spleen if palpable should receive a similar amount of radiation. The first irradiation should usually cover all the affected areas and may be spread over a period of from a week to a month if necessary. Any recrudescence should be treated at the earliest possible moment. The active focus can usually be found in persistent pyrexia. In this way, after the initial long treatment, patients are as a rule able to carry on their ordinary activities and duties with nothing but an occasional single irradiation to interfere. Periodic inspection of patients cannot be too strongly emphasized.

## Journal Obst. &amp; Gynaec. of Brit. Empire, Manchester

43: 821-1036 (Oct.) 1936

- \*Mesodermal Mixed Tumors of Uterus. G. J. Meikle.—p. 821.  
Diagnostic and Therapeutic Value of Uterotubal Insufflation: Study Based on 300 Consecutive Insufflations. G. King.—p. 865.  
Effect of Pregnancy on Blood Pressure. J. S. Henry.—p. 908.  
Mucous Colitis. J. R. Goodall.—p. 925.  
Some Unusual Cases of Twin Pregnancy. Elizabeth M. Moore.—p. 936.

**Mesodermal Mixed Tumors of Uterus.**—Meikle reviews the literature on mixed tumors of the uterus, which are rare, and reports a new case. These tumors are composed of mixed tissues of mesodermal origin, being analogous to similar tumors found in other situations, for example the kidney and parotid gland, and only tumors including mixed tissues, as opposed to those containing mixed cells, are discussed. The mixed tissues found in these tumors are essentially heterotopic to the uterus and the tumors are highly malignant. They should not be confused with other tumors containing mixed tissues derived from a degenerative process, such as fibromyomas exhibiting fatty degeneration or calcification. Corporeal tumors are more common than those of the cervix, in contrast to the statements of other writers. There is a similarity of the age incidences in carcinoma and mixed tumor occurring in the body and in the cervix of the uterus. It is hypothesized that these tumors arise from cell rests probably activated by hormone disturbances. Of the various forms of treatment discussed, preference is given to radical surgery with postoperative roentgen therapy. The mortality is more than 90 per cent and death occurs in most cases within two years.

## Gynécologie et Obstétrique, Paris

34: 257-336 (Oct.) 1936

Late Results of Ovarian Autografts with Preservation of Uterus. G. Cotte.—p. 257.

Surgical Partitioning of Douglas' Culdesac. G. Cotte.—p. 284.

Hormone Action of Acetate of Androgen on Sexual Cycle of Spleen and on Genital Tract of Doe Rabbit. G. Cotte and R. Noël.—p. 294.

Action of Dihydrofolliculin on Vegetables. C. Meyer.—p. 304.

\*Premenstrual Temperature Rise in Pulmonary Tuberculosis. R. Weiller.—p. 309.

**Premenstrual Elevation of Temperature in Pulmonary Tuberculosis.**—Weiller states that in a large number of perfectly healthy women the menstrual periods are preceded by a slight elevation of body temperature. In patients with pulmonary tuberculosis this premenstrual rise in temperature is almost constant, and the degree to which it rises varies, depending on the individual case. In patients having healed lesions the temperature reaction is slight and analogous to that observed in healthy women. In patients with active lesions the temperature reaction is more marked, sometimes approaching a true fever. Since the degree of temperature rise is roughly parallel to the activity of the tuberculous process, the author believes that it has some prognostic significance. The explanation for this phenomenon is somewhat obscure, but several pathogenic factors enter into its causation. Menstrual detoxification, discharges of hormone and bacillemia all play an important part in the thermal instability so characteristic of pulmonary tuberculosis.

## Presse Médicale, Paris

44: 1665-1680 (Oct. 24) 1936

\*Treatment of Certain Articular Fractures by Procaine Hydrochloride Infiltration and Immediate Active Motion. R. Leriche and F. Froehlich.—p. 1665.

Cancer of Upper Pole of Stomach. A. Cain and P. Augier.—p. 1667.

Fold Method of Interpretation of Gastric Cavities. J. Masson.—p. 1671.

Suppurative Pleuropulmonary States. E. Piot.—p. 1675.

**Treatment of Articular Fractures by Procaine Hydrochloride.**—Leriche and Froehlich describe their method of treatment of articular fractures without displacement or not requiring exact reduction, by means of infiltration of the neighboring ligaments with procaine hydrochloride. By this means they hoped to block the vasomotor phenomena which tend to create a secondary arthritis and to allow active immediate motion because of the absence of pain. They obtained results which passed even their expectations. Their patients recovered with great ease in a short time and with maximal functional results. The effect of each infiltration lasts from twelve to twenty-four hours, and they repeated their injections as often as necessary. Three examples of this procedure are reported in detail. In each the results were exceptionally good. The authors believe that this method has a wide margin of application in all cases in which it is not necessary to reduce the fracture and maintain the reduction by appliances. It is curious to see how much the immediate return to function and the suppression of pain improve the quality of the results. Simple surgical common sense suffices to mark the limits of immediate mobilization after such fractures.

## Helvetica Medica Acta, Basel

3: 627-736 (Oct.) 1936. Partial Index

Disturbances in Intestinal Resorption and Their Treatment. A. Gigon.—p. 627.

\*Changes in Electrocardiogram After Work Test: Their Importance in Disturbances of Coronary Circulation. P. W. Duchosal and G. Henny.—p. 652.

C Hypovitaminoses. A. Jezler and H. Kapp.—p. 657.

Impairment of Liver and Porphyrin Metabolism. A. Vannotti.—p. 663.

Melanuria in Pigmentary Cirrhosis. M. Hausmann.—p. 695.

\*Weil's Disease in Switzerland. O. Gsell.—p. 702.

\*Significance of Determination of Diameter of Erythrocytes with Especial Consideration of Carcinoma and Ulcer of Digestive Tract. A. Alder and N. Markoff.—p. 709.

**Electrocardiographic Changes After Work Test in Disturbances of Coronary Circulation.**—Duchosal and Henny cite authors who made electrocardiographic studies in connection with the so-called work test in the diagnosis of disorders in the coronary circulation. To estimate the reliability of this test, they made it on ninety subjects: thirty-seven normal persons, ten patients with cardiac defects but without

coronary disorders, nineteen patients with proved angina pectoris and twenty-four doubtful cases of angina pectoris. A tabular report indicates that in each of the first two groups there was one positive case. Of the nineteen patients with proved angina pectoris, eleven gave positive tests, one a doubtful one and in the remaining seven the outcome was negative. Of the twenty-four doubtful cases of angina pectoris, seven gave positive and four doubtful tests, while in the other thirteen the outcome was negative. The authors analyze these results and conclude that the work test in connection with electrocardiography has diagnostic value in the doubtful cases of angina pectoris. They think that the positive work test indicates disturbances in the blood perfusion of the myocardium but does not necessarily imply the existence of anatomic lesions in the coronary vessels.

**Weil's Disease in Switzerland.**—Gsell directs attention to an increase in cases of Weil's disease. Investigations in four proved and one suspected case during the summer of 1935 indicated that infestation of rivers with rats might be responsible for these cases. Some of the patients had bathed in rat-infested waters, but the author points out that working on canals or the intake of contaminated drinking water or food may likewise be a factor. He further directs attention to the fact that an increased incidence of Weil's disease has been reported also from other countries. In the completely developed cases the diagnosis is not difficult, but the abortive forms are harder to recognize. He thinks that in cases in which there are high fever, hepatorenal impairment, leukocytosis, early and great acceleration of the sedimentation speed of the erythrocytes, irritation of the bone marrow and a tendency to hemorrhagic diathesis, Weil's disease should be thought of and serologic tests should be made. The condition should be differentiated from catarrhal icterus, which usually takes its course without fever, renal involvement, increased sedimentation speed and leukocytosis. For the treatment of Weil's disease the author recommends convalescent serum, blood transfusion, infusion of fluids (to compensate for the loss of fluids), rabbit immune serum and bismuth-chiniofon.

**Diameter of Erythrocytes in Carcinoma and Gastric Ulcer.**—Alder and Markoff determined the mean size of the erythrocytes in 100 cases of carcinoma or ulcer of the digestive tract. In the majority of cases of gastric carcinoma they observed that a macrocytosis develops relatively early; that is, at a time when neither anemia nor anisocytosis is observable as yet. Location or duration of the carcinoma, age of the patient, existence of hepatic metastases or the state of the secretory action of the stomach has no influence on the macrocytosis. The authors think that a toxic influence on the blood formation is responsible for the development of the macrocytosis. They are convinced that a deficiency of the intrinsic factor of the antianemic principle cannot be the causal factor, because the macrocytosis is absent after gastric resection on account of ulcer but it is present in patients in whom resection has been done on account of carcinoma. They conclude that the determination of the mean diameter of the erythrocytes may in some cases be of value in the differential diagnosis of gastric carcinoma.

## Giornale Veneto di Scienze Mediche, Venice

10: 645-712 (Oct.) 1936

\*Ultraviolet Irradiated Blood: Therapeutic Results. B. Boggian.—p. 645.

Ether Anesthesia with Tiegel Dräger's Apparatus. T. Merler.—p. 662.

New Method of Treating Costal Fractures. Z. Bruno.—p. 666.

Hirsutism in Fetus: Case. E. Borsato.—p. 675.

Malignant Granuloma: Experimental Study of Cases. L. Pasqualigo.—p. 680.

Atypical Forms of Pneumonia with Retarded Crises in Children. F. A. Perocco.—p. 691.

**Injection of Irradiated Blood.**—Boggian reports satisfactory results from the administration of intramuscular injections of citrated blood subjected to ultraviolet irradiation in more than 216 patients suffering from skin diseases, acute or chronic anemia and various forms of rheumatism. The author says that the material used in the procedure should be sterilized. The layer of blood in the petri dish to be irradiated should be thin. The blood is frequently mixed by tipping the dish in the horizontal and oblique positions. For the irradiation (from

half a minute to two minutes) a modified Hanan's lamp (Bactophos) is employed. The blood is then injected in increasing doses of from 2.5 to 15 or 30 cc. for each injection. The injections are administered slowly three times a week until fifteen injections have been given. A solution of citrate can be added to the blood for maintaining its fluidity. Adding anesthetic solutions to the blood frequently results in the formation of local abscesses and diminishes the stimulating properties of the blood. The author used heterotherapy. He concludes that on ultraviolet irradiation a substance appears in the blood which stimulates the formation of erythrocytes and hemoglobin, except after splenectomy. The substance is a hormone not yet identified which exists in the blood plasma but not in blood serum. It originates in the erythrocytes, is labile to ultraviolet irradiations and paraformaldehyde and favorably modifies the consistency of the bone marrow. The failure of irradiated blood to stimulate erythropoiesis in splenectomized animals shows that the substance does not exist in the blood after splenectomy and confirms the fact that there is a relation of interdependence between the spleen and the bone marrow in the processes of erythropoiesis. The rapidity and intensity of the erythropoietic reaction of the patient to the injection depends on the amount of stimulating substance contained in the injected blood, which in turn depends on the number of erythrocytes in the donor's blood.

### Minerva Medica, Turin

2: 401-420 (Oct. 27) 1936

Gastroduodenal Ulcer. L. Zoja.—p. 401.

Anatomic and Clinical Study of Extrapleural Pneumothorax. C. Rotta.—p. 404.

\*Favism: Skin Reaction in Forty-Four Cases. M. Pazzi Demurtas.—p. 411.

**Skin Reaction from Bean Extracts in Favism.**—Pazzi Demurtas made skin reactions with extracts of beans on forty-four persons of various ages who were suffering from favism. The author states that there are three different allergens in the beans; the first is found in the flowers, the second in the seed, the coat and the shell of the beans and the third in the parasites of dry beans or in the remaining fractions of parasites in the beans. The seed allergen is the same as that of the flowers but is modified during the process of maturation of the plant, and through the modifications its biologic properties are changed. The flower allergen is more volatile than that of the seed, but the seed allergen is more concentrated. Bean allergens lose their biologic action as the beans dry up. But, as beans dry up, parasites appear within them which contain allergens with the same hypersensitizing properties as the allergens of the plant and of fresh beans. The hypersensitivity produced by the parasite does not show itself with the grave symptoms of jaundice and hemoglobinuria that are characteristic of typical favism. The symptoms are benign and sometimes there are no symptoms at all caused by parasitic hypersensitization. This is due to the biologic characteristics of the parasite. Patients who suffer a serious attack of favism are temporarily desensitized. During the period of desensitization they give negative skin reactions to the allergen that caused the attack. Desensitization in these cases is not caused by general anergy. When the patient is sensitive to various allergens the skin reaction is negative only to the allergen that caused the attack and positive to all other allergen extracts. When the patient again becomes sensitive to the allergen that caused the attack, the skin reaction becomes positive again. Some hypersensitive persons lose their hypersensitiveness after a given lapse of time. The skin reaction in these persons is never negative.

### Policlinico, Rome

43: 533-592 (Nov. 1) 1936. Medical Section

Changes of Glycemia Following Insulin Injections and Simultaneous Administration of Dextrose. P. Levi.—p. 533.

\*Cerebrospinal Fluid in Tetanus from Immunitary Point of View. R. Liberti.—p. 540.

Cholesterinic Lipoidosis: Case. E. Tarantelli.—p. 556.

Pathogenesis of Favism. A. Luisada.—p. 579.

**Cerebrospinal Fluid in Tetanus.**—Liberti states that the inoculation of large doses of cerebrospinal fluid (17 cc.) from patients suffering from tetanus failed to give tetanus to the

inoculated guinea-pigs. The same negative results were obtained when the cerebrospinal fluid used in the experiment was taken after prolonged anesthesia of the patient in aseptic meningitis. The presence of antitoxin in the cerebrospinal fluid of patients suffering from tetanus who were treated by intramuscular administration of antiserum was verified. The amount of antitoxin in the cerebrospinal fluid was small compared to that in the blood, as was manifested by the antitoxic power of the blood on the one hand and of the cerebrospinal fluid on the other. The antitoxic power of cerebrospinal fluid is proportional to the intensity of meningeal irritation. It can be greatly increased by inducing meningeal irritation in the patient. According to the author, the results of the experiments prove that the toxins do not pass into the cerebrospinal fluid in tetanus and that the antitoxins pass into the fluid during antiserum treatment.

### Brasil-Medico, Rio de Janeiro

50: 969-990 (Nov. 7) 1936

\*Modified Staining Technic for *Spirochaeta Pallida* in Smears. A. G. de Castro Cerqueira.—p. 969.

Suggestion and Hypnotism. A. M. Langsner.—p. 976.

Foreign body in Respiratory Tract: Case. T. Falcão.—p. 981.

**Staining Technic for *Spirochaeta Pallida*.**—De Castro Cerqueira describes a modification of Hollande's technic for identification of *Spirochaeta pallida* in smears prepared from the exudates of suspected lesions. The modification consists in staining the smears with Ziehl's carbolfuchsin (instead of impregnating them by a solution of silver nitrate) and diminishing the concentration of glacial acetic acid of the original technic. *Spirochaeta pallida* stains smoothly and completely a clear violet pink, whereas the microscopic field stains a reddish violet. The author examined more than 2,796 smears from exudates. *Spirochaeta pallida* was identified in 14.51 per cent of the cases. The low percentage of positivity is due to the fact that smears were made systematically in all cases of ulcerations and excoriations of the skin and mucosa seen by the author, especially those on the genital organs, regardless of symptoms of syphilis. In several cases the positive results of the test preceded the appearance of characteristic clinical symptoms of syphilis and of chancre. The technic is simpler and more effective than other technics for identification of spirochetes, including Hollande's.

### Beiträge zur klinischen Chirurgie, Berlin

164: 337-512 (Oct. 21) 1936. Partial Index

Injuries of Diaphragm. J. J. Nierstrasz.—p. 337.

\*\*\*"Fish Vertebra" Disease. H. Brandt.—p. 354.

Experimental Studies on Relation of Vitamins to Infection. H.-J. Lauber.—p. 365.

Coxa Valga Luxans. A. Studemeister.—p. 370.

Recurrent Appendicitis. L. Drüner.—p. 394.

High Voltage Roentgen Therapy of Hypertrophied Prostate. K. Abel.—p. 396.

Operative Treatment of Simple Fractures. O. Kingreen.—p. 401.

**"Fish Vertebra" Disease.**—Brandt is inclined to consider a type of osteomalacia of the vertebral column, characterized by hour glass or "fish vertebra" deformity, an independent entity. The disease has an insidious onset with ill defined pains along the entire vertebral column, more pronounced over the lower thoracic and upper lumbar vertebrae. Examination reveals a mild kyphosis, which may be associated with a kyphotic projection of the spinous processes in the region of the tenth thoracic to the second lumbar vertebra. Blood calcium is normal or increased. Roentgenologic examination is of decisive value in the diagnosis. Stereoscopic plates taken in two planes, the anteroposterior and the lateral, reveal a lack of calcium in all the vertebrae, as well as in the bones of the pelvis and the lower extremities. The lateral view demonstrates the fish vertebra-like deformity. The pathogenesis is explained on the basis of softening of the substance of the body of the vertebra, the characteristic deformity resulting from the pressure of the intervertebral disks, which remain normal. The author proposes that this disease picture be considered an independent clinical entity to be differentiated from a purely symptomatic similar deformity caused by tumor metastases, multiple myeloma, infectious spondylitis or trauma.

# The Journal

OF THE

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MORRIS FISHBEIN, M.D.

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VOLUME 107

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\*American Journal of Diseases of Children. A. M. A., Chicago.  
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## SUBJECT INDEX

This is an index to all the reading matter in THE JOURNAL. In the Current Medical Literature Department only the articles which have been abstracted are indexed.

The letters used to explain in which department the matter indexed appears are as follows: "BI," Bureau of Investigation; "E," Editorial; "C," Correspondence; "ME," Medical Economics; "ab," abstract; the star (\*) indicates an original article in THE JOURNAL.

This is a subject index and one should, therefore, look for the subject word, with the following exceptions: "Book Notices," "Deaths," "Medicolegal Abstracts" and "Societies" are indexed under these titles at the end of the letters "B," "D," "M," and "S." State board examinations are entered under the general heading State Board Reports, and not under the names of the individual states. Matter pertaining to the Association is indexed under "American Medical Association." The name of the author, in brackets, follows the subject entry.

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*Conf.*—Conference  
*Cong.*—Congress  
*Conv.*—Convention  
*Dist.*—District  
*Hosp.*—Hospital  
*Internat.*—International  
*M.*—Medical  
*Med.*—Medicine  
*Nat.*—National  
*Phar.*—Pharmaceutical  
*Phys.*—Physicians  
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